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Chemical Week

August 16, 1958

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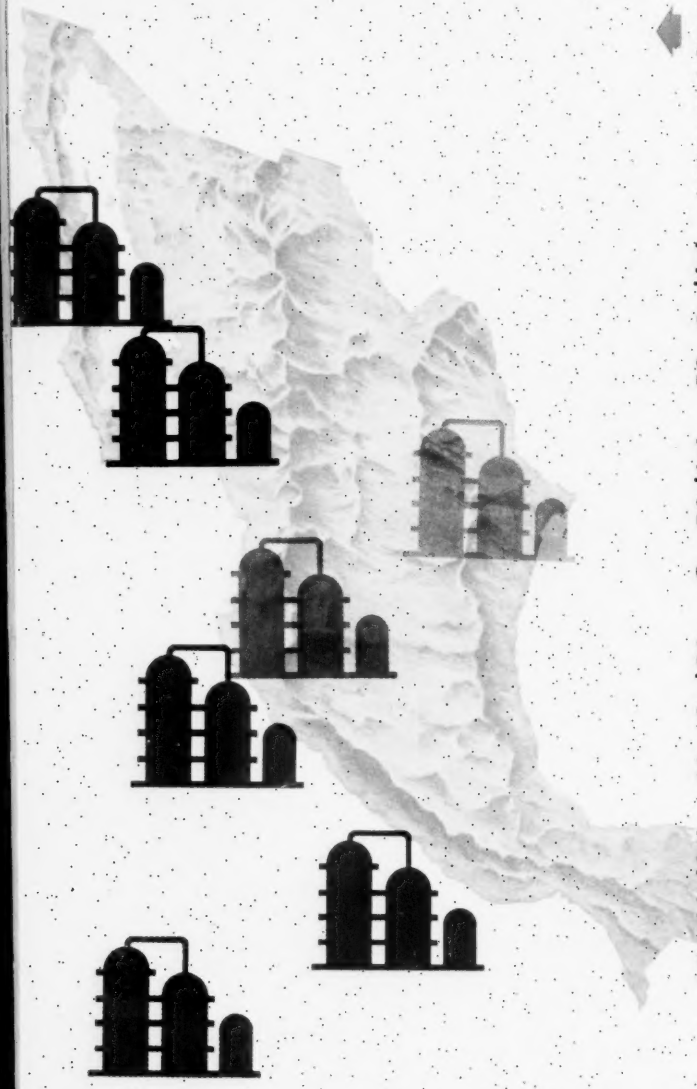

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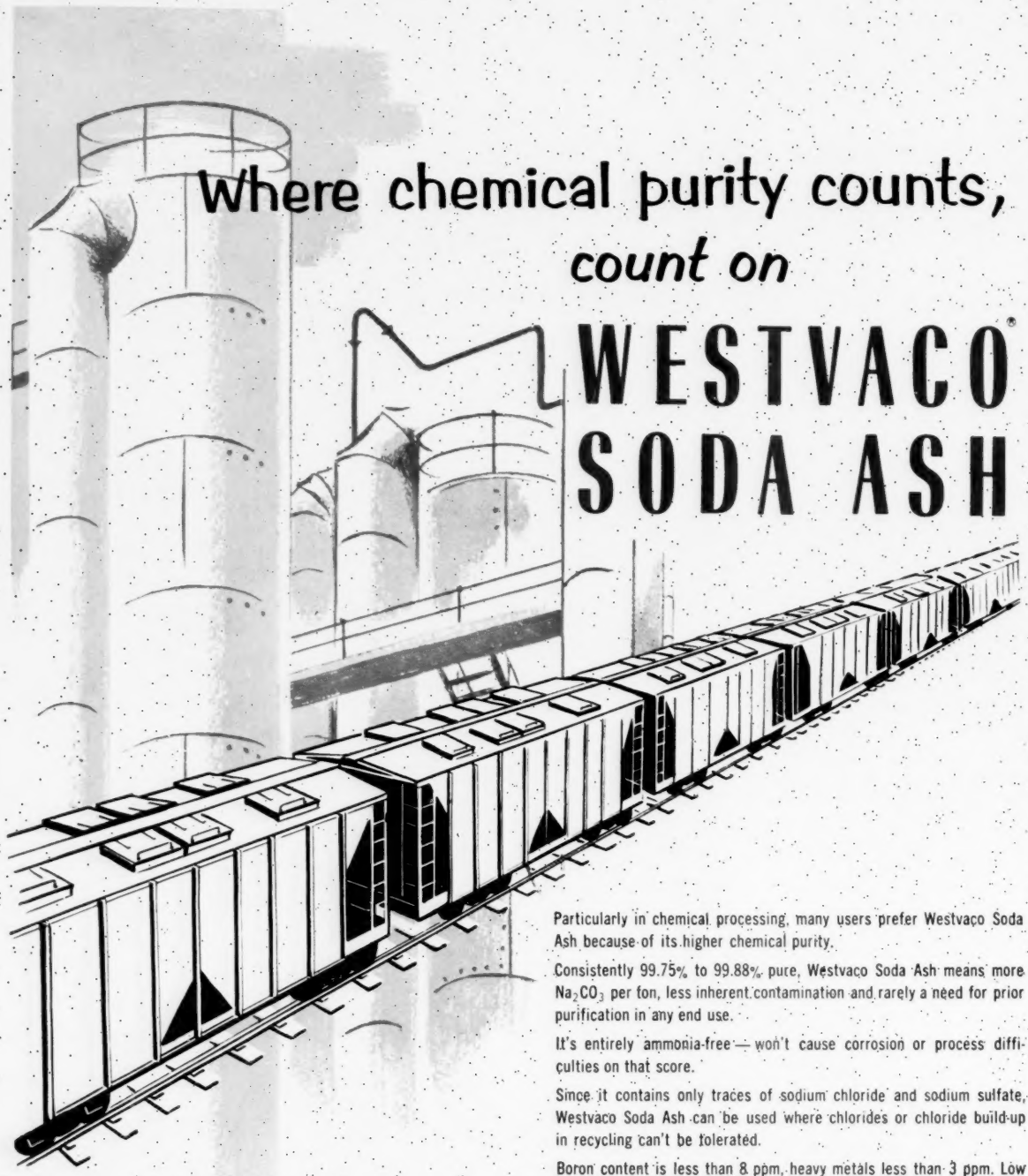

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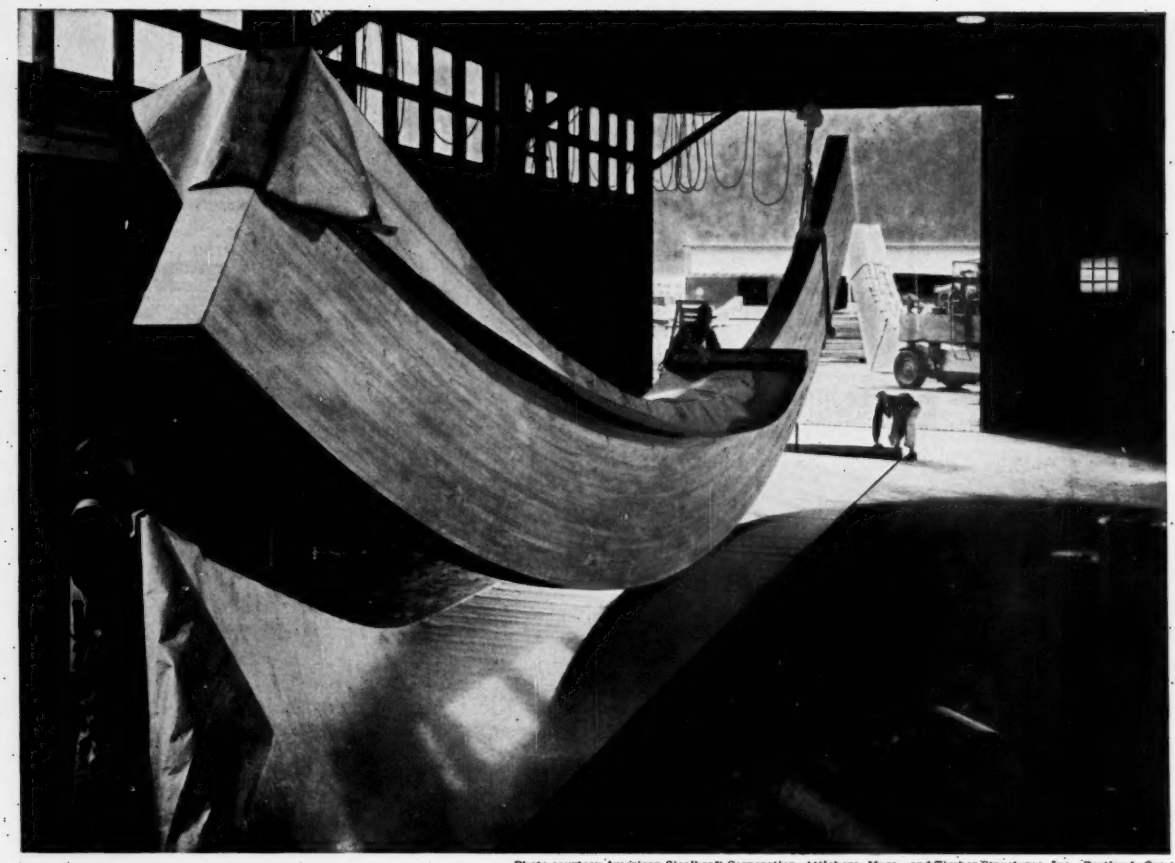

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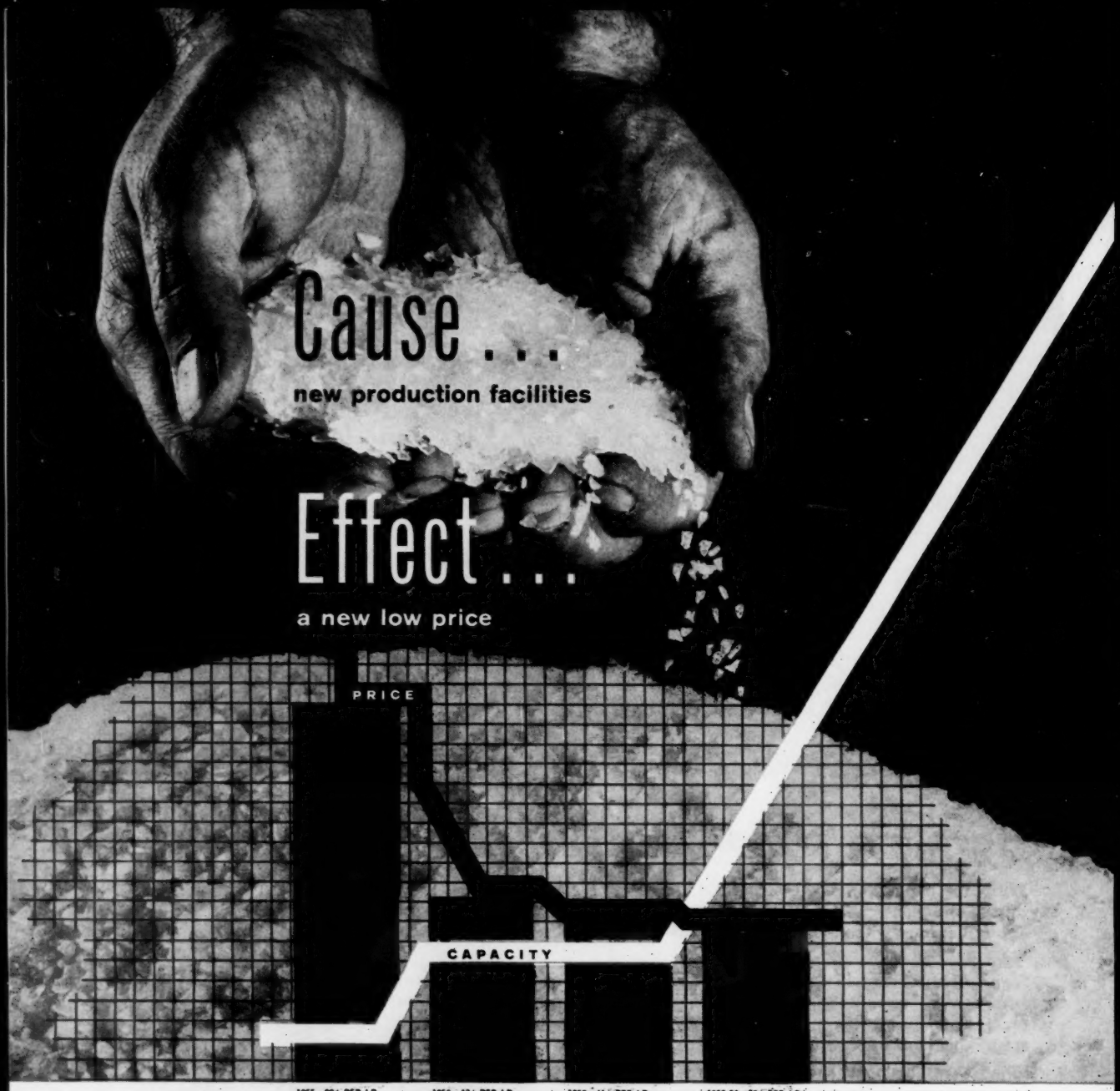

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40,617 copies of this issue printed

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Chemical Week is published weekly by McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y. Place of publication: 3rd and Hunting Park Ave., Philadelphia 40, Pa. Second-class mail privileges authorized at Philadelphia. Subscription: $3/year in U.S.A. Send subscription correspondence and change of address to Fulfillment Manager, Chemical Week, 330 W. 42nd St., New York 36, N.Y. Please see page 5 for subscription requirements.

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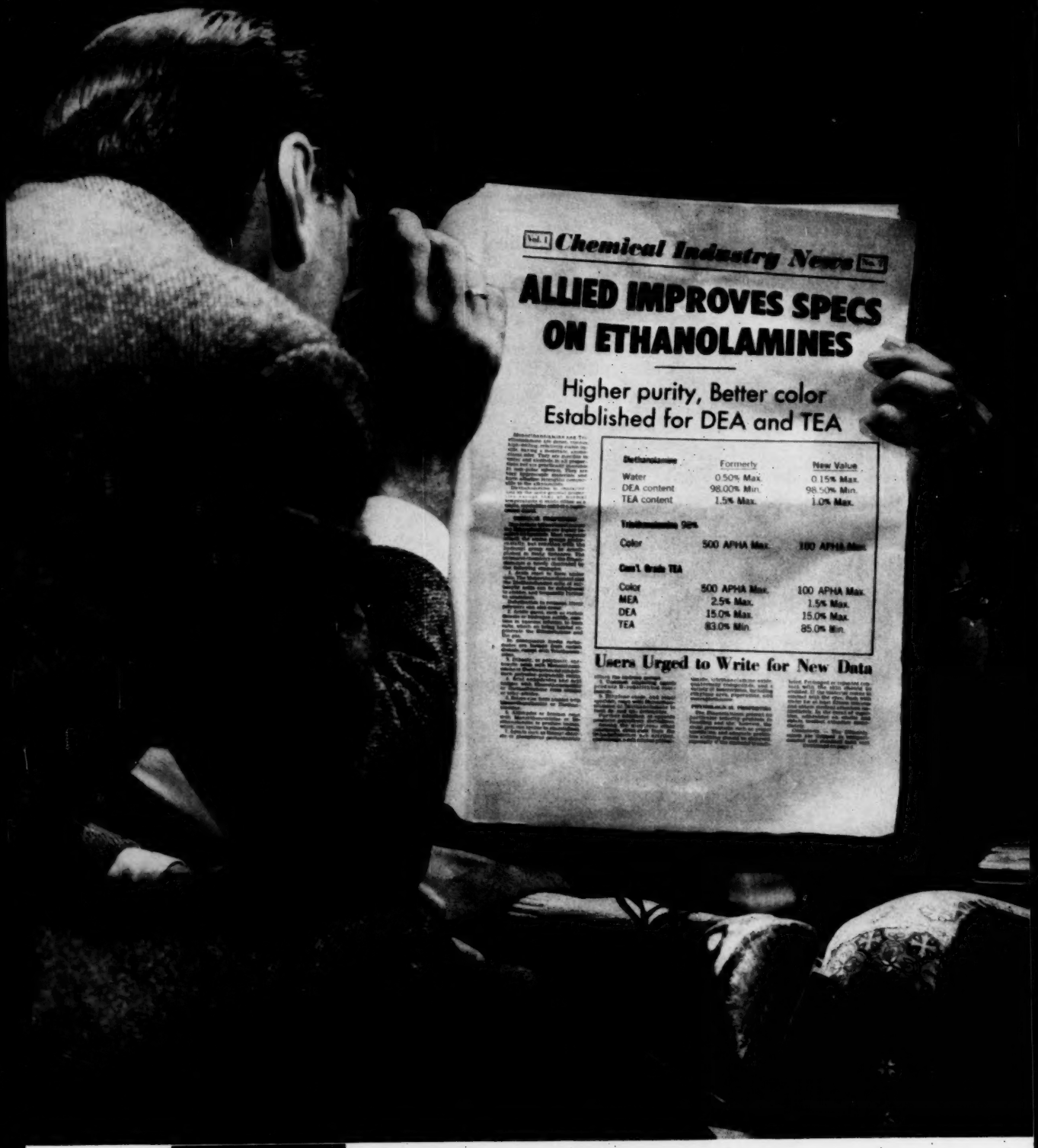

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AUGUST 16, 1958 **Vol. 83, No. 7**

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., James H. McGraw (1860-1948), former. EXECUTIVE, EDITORIAL, CIRCULATION and ADVERTISING OFFICES: McGRAW-HILL BUILDING, 330 West 42nd St., New York 36, N.Y. See panel below for directions regarding subscriptions or change of address. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice-President; L. Keith Goodrich, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising Sales; A. R. Venezian, Vice-President and Circulation Coordinator.

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VIEWPOINT

IN ITS TWO-YEAR economic study of the antibiotics industry (*p. 69*), Federal Trade Commission has performed a worthwhile statistical service. But in its accompanying allegations of patent fraud and price-fixing conspiracies (*CW, Aug. 9, p. 21*), the agency seems to be shooting from the hip.

Take FTC's accusation that the five companies "fixed and maintained arbitrary, artificial, noncompetitive and rigged prices" on their tetracycline products. Weigh that damning assertion against these points:

- FTC's own figures show that, whereas the U.S. armed forces had to pay about 45-50¢ per 250-mg. capsule of Aureomycin or Chloromycetin back in 1949, they now pay only 11-12¢ for the same dosage of Aureomycin, Chloromycetin or tetracycline.
- The Labor Dept. reports that, although the average wholesale price for all commodities has risen about 20% since '49, the corresponding average for drugs and pharmaceuticals has declined 6-7%.
- Operating costs have been rocketing over the past 10 years.
- Because of what FTC itself recognizes as "the continuing emergence of new antibiotic drugs," any given product's profit-making life is uncertain.
- The commission itself found that a large share—something like 33-50%—of pharmaceuticals' retail prices reflects distribution costs and markups.

If there was falsification or collusion in connection with the '55 patent on tetracycline, that is a matter for the Justice Dept.

If that patent has been used in an unlawful maneuver to fix prices, FTC properly should take action. But first it should establish that there's something sinful about the level of those allegedly rigged prices. So far, FTC hasn't even asserted—much less proved—that antibiotics prices are out of line with producers' over-all operating costs and business risks.

H. C. Johnson

Editor-in-Chief

MIN CHEMISTRY

...news briefs

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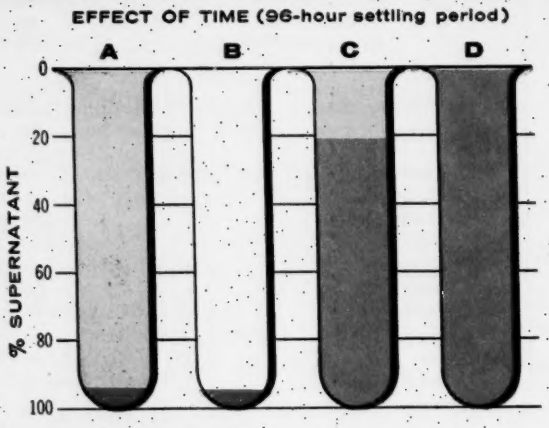

Anti-Settling Characteristics, Material Costs of Attagel 20 Formulations

Sample Number	BASIC FORMULA*						Approx. Raw Material Costs	
	Red Oxide	TiO_2	Alkyd (50% NVM)	Mineral Spirits	Attagel 20	Surfactant	$/lb.	$/gal.
A	13.50	1.50	10.00	75.00	0.00	0.00	0.070	0.54
B	13.50	1.50	10.00	73.67	1.00	0.33	0.072	0.56
C	13.50	1.50	10.00	71.67	2.50	0.83	0.076	0.60
D	13.50	1.50	10.00	68.30	5.00	1.70	0.079	0.65

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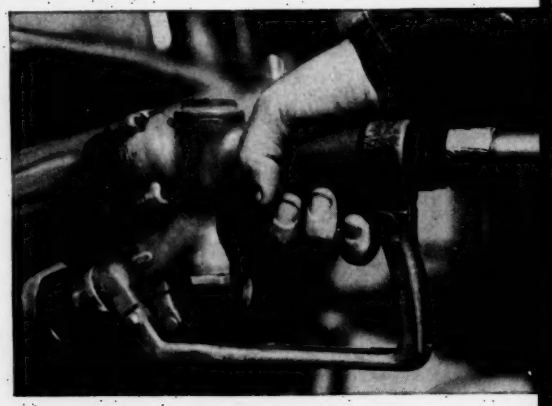

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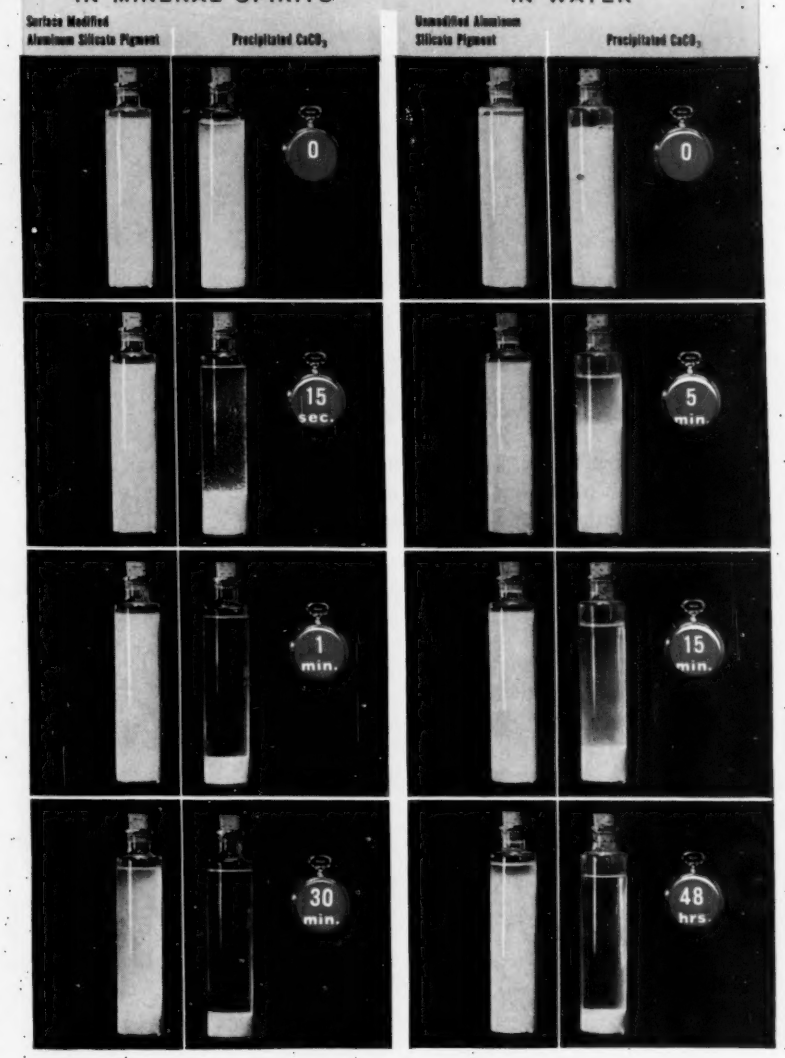

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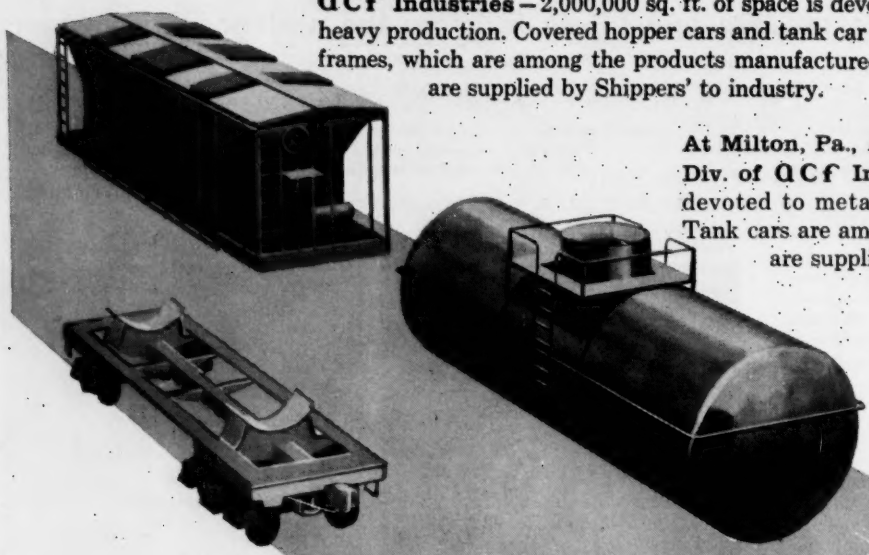

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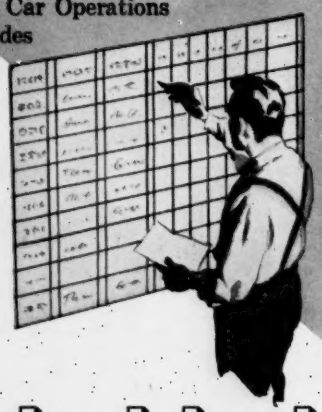

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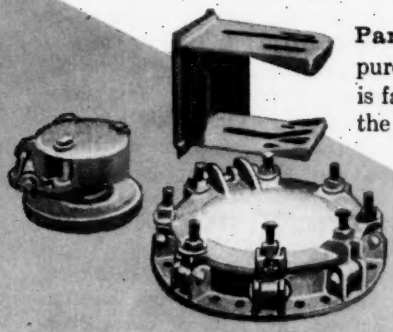

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OPINION

Optimistic Economist

TO THE EDITOR: In light of the current business situation and rather depressed short-term outlook, I viewed with pleasure your special report titled "The Next Five Years" *(June 21)*. Unlike much of the material printed of late that refers to the economic scene, the article is excellent in scope and presentation. It is certainly reassuring to learn that our optimistic views are shared by our colleagues in the CPI. I was particularly impressed by the confidence displayed in the remarks of the smaller firms.

We at Cyanamid have always felt that the future for the chemical manufacturers is limited only by their ingenuity and inventiveness. . . . It is hoped that further analyses of this type will be forthcoming.

RALPH E. BURGESS
Economist
American Cyanamid Co.
New York

Price of Paint

TO THE EDITOR: The article dealing with the development of an isophthalic-alkyd-based exterior house paint *(July 5, p. 39)* is most interesting to us, of course.

Of particular interest is your comment that the other major paint manufacturers "will probably let Fuller run the isophthalic race alone, at least in '58." If true, this is certainly good news, because our factory shipments of this new paint for the first six months of the current fiscal year are 57% ahead of the corresponding period a year ago. We are delighted with the instantaneous public acceptance of the new Fuller Exterior House Paint.

However, we are concerned with certain inaccuracies in the article. Since we are not about to publicize the formula that has proved so successful, we refrain from commenting on the evidently speculative statements regarding the content of our new paint. But when you venture into such a statement as "it doesn't brush on as easily as paints made with linseed oil," we can only assume that you are quoting someone who hasn't actually tried the new paint. Among its many virtues is the fact that it brushes much more easily than conventional oil-based house paints. If you would care to have your Western editor try the material, we would be most happy to provide some for him and to observe any comparison he cares to make.

Of even more concern to us is the concluding paragraph, which states, "Fuller is selling isophthalic paint for $7.49/gal. in white and lighter tints, $7.97/gal. in trim and accent colors —a price well above the average $6/gal. for exterior house paints based on linseed oil . . ." These are suggested retail prices in the San Francisco price zone. Just before writing this letter, we checked retail outlets for two of our major competitors and found standard oil-based outside house paints selling at retail from $7.20/gal. to $8.50/gal. in San Francisco.

Despite switching to the new and vastly superior quality, we have not increased the price of our Exterior House Paint. Our advertising makes a point of the fact that this . . . new paint costs no more. . . .

H. S. MARGETTS
Vice-President
W. P. Fuller & Co.
San Francisco

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

MEETINGS

Gordon Research Conferences, series of 36 topics, Colby Junior College, New Hampton School and Kimball Union Academy, all in New Hampshire, ends Aug. 29.

"Atoms for Peace," second international exhibition, Geneva, Switzerland, Sept. 1-14.

American Chemical Society, 134th national meeting, Chicago, Sept. 7-12.

DCAT, 68th annual meeting, Sagamore Hotel, Lake George, N.Y., Sept. 11-14.

New!

from International Paper

TYON

An improved anti-skid treatment for Multiwall Bags!

Here is an anti-skid treatment for multiwall bags that really works. Inclined Plane tests of bags treated with "Tyon" show:

- *"Tyon" is 20% better than ordinary anti-skid treatments*
- *30% better than rough kraft*
- *40% better than standard kraft*

You can cut breakage loss—and danger from slipping, creeping stacks in the warehouse and on your trucks. Bags treated with "Tyon" stack to stay. They cling to pallets. Offer firm grip for fast, safe loading and unloading.

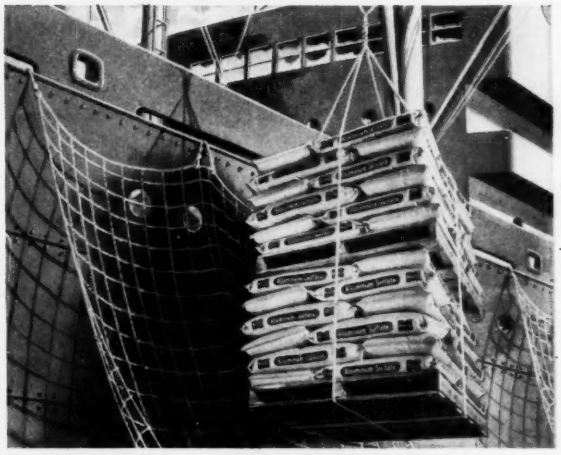
Remember, you get lots of advantages—with a lot of savings—when you specify multiwall bags treated with "Tyon"... another product of International Paper's long research and experience.

TYON

Look for this trademark on the bags you buy.

Send coupon for samples and full information

Up ramps and over bumps, bags treated with "Tyon" sit tight. *Allow faster handling.*



Stacked high or riding a sling, they cling. *Safer—resist slip and creep.*

Over bumpy roads, around curves, they ride—don't slide. *Eliminate breakage—speed delivery.*

your most dependable source of supply . . .

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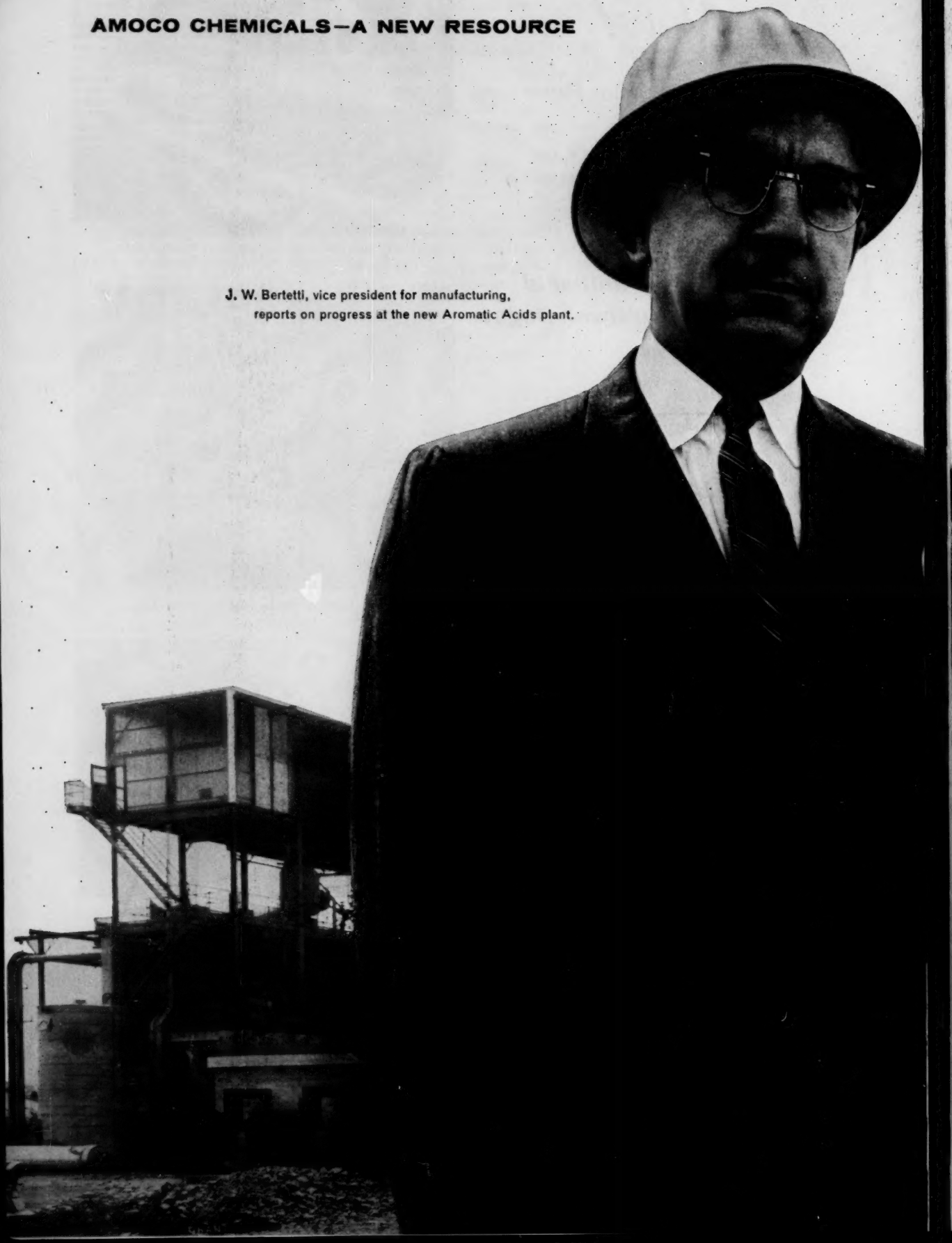
AMOCO CHEMICALS—A NEW RESOURCE



J. W. Bertetti, vice president for manufacturing, reports on progress at the new Aromatic Acids plant.

report from JOLIET

How AMOCO Chemicals is fulfilling its promise to become a new resource

Our new Aromatic Acids plant at Joliet, Illinois will be in production soon. From this facility we shall be able to offer the paint, plastics and chemical industries:

Phthalic Anhydride Isophthalic Acid Terephthalic Acid
Dimethyl Terephthalate Benzoic Acid

For the first time, users of phthalic anhydride and isophthalic acid will have a xylene-derived source of supply for these products located in the Midwest.

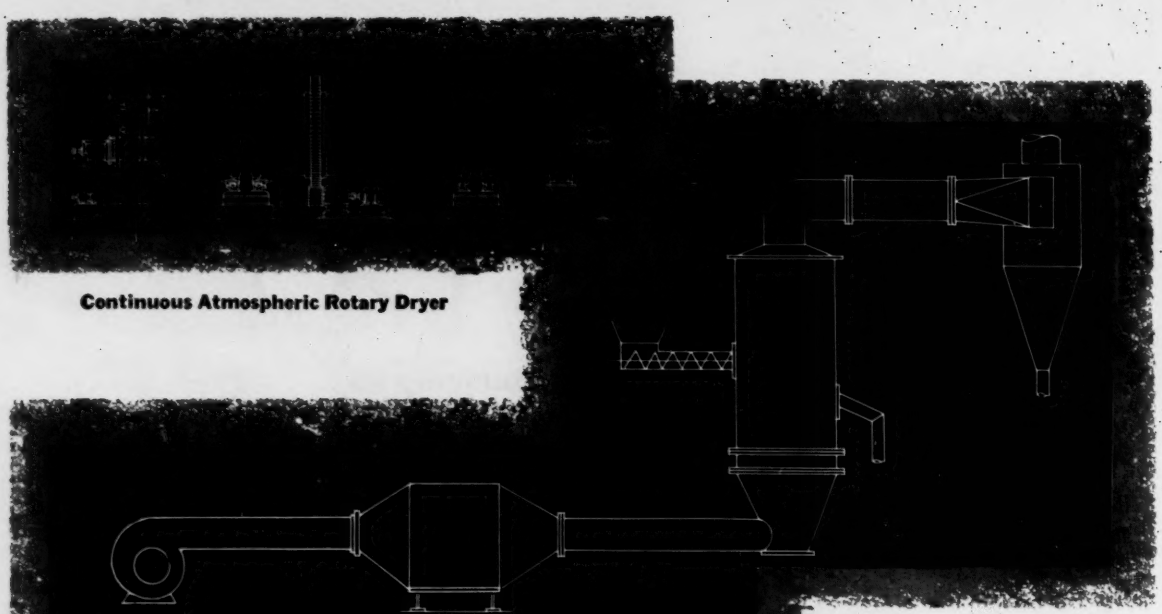
Our Aromatic Acids plant uses a unique process which oxidizes xylenes to acids of high quality in a single step. The process we are working with is extremely flexible. It makes possible the oxidation of a wide range of hydrocarbons, resulting in the production of many different intermediates. The opportunities are exciting.

It is the plan of Amoco Chemicals to be a new resource for industry. Our Joliet plant is a part of that plan. If you would like additional information about the products which will be offered from this plant, write us. Your letter will receive immediate attention.

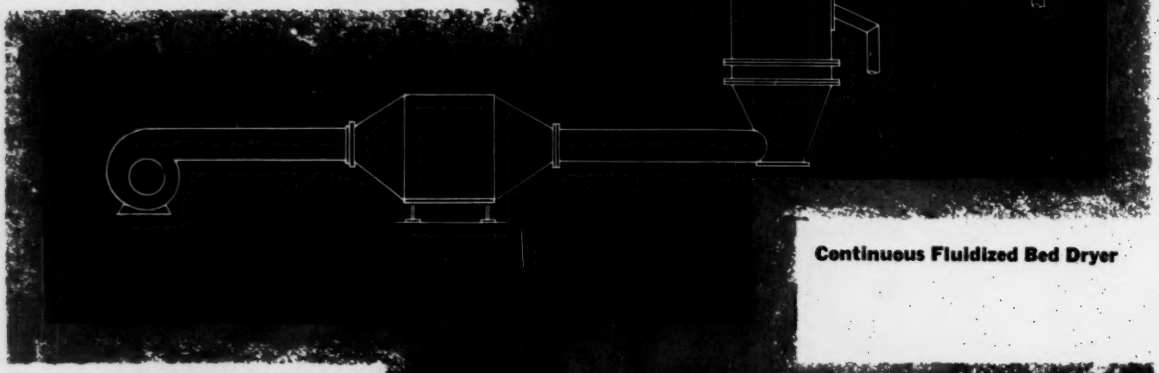
AMOCO CHEMICALS

AMOCO CHEMICALS CORPORATION

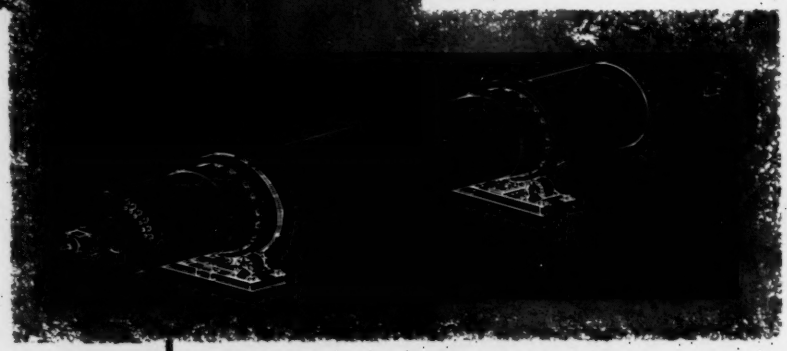
910 South Michigan Ave., Chicago 80, Illinois



Continuous Atmospheric Rotary Dryer



Continuous Fluidized Bed Dryer



Continuous Solvent Stripper
Continuous Gas Solids Reactor
Continuous Vacuum Dryer

Now, at one convenient location, you can test-dry your materials in a variety of equipment

At General American's East Chicago pilot plant, you can test the drying or reacting of your materials in the widest range of drying equipment ever assembled in one place.

Louisville Dryer engineers will work with you—study your materials and needs, make recommendations for type of equipment, size and heating medium. You can check these recommendations for yourself through practical tests. Your Louisville Dryer is then engineered for most efficient and economical service—built specifically to meet your needs.

To test the drying of your materials in all these different types of drying equipment, call in a Louisville Dryer engineer. There is no cost or obligation.

PROCESS EQUIPMENT DIVISION GENERAL AMERICAN TRADE MARK

LOUISVILLE DRYER DIVISION
GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South La Salle Street, Chicago 90, Illinois
Offices in principal cities

borax boric acid and boron compounds

Stauffer has become a major source of supply for these basic Boron chemicals. Purity meets the highest standards; granulations meet the widest range of needs.

Boron Trichloride is the starting point of high-energy fuels for rockets; it is used in making the newer highly heat-resistant resins; it contributes to the ultra-speed of modern planes while it solves some of the thermal problems generated by high-speed flight. Boron Trichloride is also an important source of elemental boron, contributing unique values to nuclear reactors of increasing efficiency and safety.

Boron Trichloride and Boron Oxide – also chlorides of Antimony, Aluminum, Silicon, Titanium and Zirconium – are available in truckloads or carloads. We can meet your specifications and delivery schedules.

Borax is available as decahydrate, pentahydrate, Borax glass and Anhydrous Borax (West End brands) and as Boric Acid. Available in unlimited quantities from Akron, Chicago, No. Portland, Ore., San Francisco and West End, Calif.

Stauffer's Research Staff has done extensive research in metallic chlorides and welcomes inquiries. A catalog of Stauffer's Boron Products... also a new brochure on Metallic Chlorides are available on request.

Stauffer CHEMICALS SINCE 1885

Stauffer Means Service

STAUFFER CHEMICAL COMPANY

380 Madison Avenue, New York 17, N. Y.

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CHEMICALS OUTLOOK

August, 1958

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

NEW WYANDOTTE PROPYLENE OXIDE PLANT ON STREAM

Under construction for the past year at Wyandotte, Michigan, Wyandotte's new Propylene Oxide plant is now on stream . . . producing propylene oxide, propylene dichloride, and dichloroisopropyl ether — all in commercial quantities.

Built to meet the growing need for higher purity chemical raw materials, this new facility will have ample capacity to provide for Wyandotte's entrance into the propylene oxide market as a merchant producer, in addition to its captive requirements. Shipments are available in 55-gal. non-returnable drums, as well as in 4,000-gal. and 10,000-gal. tank cars.

The plant utilizes the chlorohydrin process to make propylene oxide of high commercial purity . . . making it pure enough for use in the manufacture of Wyandotte Pluronic* and Tetronic* polyethers, and related products. In fact, its high purity analysis recommends its use in the manufacture of any propylene oxide based product.

Some applications of propylene oxide include: chemical intermediate in the preparation of surfactants, glycols, petroleum demulsifiers and oil additives . . . it is also used in the manufacture of pharmaceuticals, dyes, and textile-fiber lubricants, as well as in adhesive and insecticide formulations.

This new propylene oxide plant is another progressive step by Wyandotte to make important raw materials available to industry . . . broadening the base of petro-chemical building blocks. Like our new Geismar Works immediately south of Baton Rouge, La., it is part of a long-range expansion program designed to anticipate the future needs of our customers and prospective customers . . . a planned growth that serves as a symbol of Wyandotte's faith in the future.

WYANDOTTE RESEARCH FACILITIES EXPANDED

An addition to Wyandotte's modern research center at Wyandotte, Michigan, has been completed. New construction includes laboratories, test cells, and supporting facilities which have the versatility to explore a wide range of corporate and Defense Department research projects dealing with high pressures and temperatures, and with toxic materials. The addition will permit an increased level of effort in the research and development of new fuels, lubricants, elastomers, and polymers . . . and in the development of new products based on ethylene and propylene oxides to augment those currently manufactured. Wyandotte's Research and Engineering Division has been active in rocket-fuel research since 1949.

*REG. U.S. PAT. OFF.

Wyandotte CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

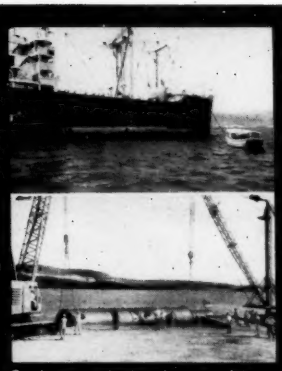
SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • MURIATIC ACID • HYDROGEN • DRY ICE
GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • CARBOSE® (Sodium CMC) • ETHYLENE OXIDE • ETHYLENE DICHLORIDE • ETHYLENE GLYCOL • PROPYLENE OXIDE
PROPYLENE DICHLORIDE • POLYPROPYLENE GLYCOL • DICHLORODIMETHYLHYDANTOIN • CHLORINATED SOLVENTS • OTHER ORGANIC AND INORGANIC CHEMICALS

Here is the refinery Procon built for The Texas Company (West Indies) Limited 3 miles south of Santiago de Cuba. Inset shows complete refinery area early in construction period.

Creative Construction

how **PROCON** put it to work for Texaco in Cuba

Procon trained 85% of the Cuban workmen in construction technicalities.



Crude atmospheric column, prefabricated in the States, was floated ashore in 2 hours—a saving of much time and cost.

Solid rock was encountered at a number of locations, required blasting to sink foundations, underground piping.

It's a pretty exacting business at best, building a refinery from scratch. Procon did this one the hard way, meeting and beating the challenges of: a site difficult for access by land . . . 85% of Cuban workmen needed training in technicalities of construction . . . applying the creative solutions to the problems shown in the pictures you see here. If you have a refinery in mind . . . or a petrochemical plant, or a chemical plant, or individual process units for any of these . . . you can be sure of top-flight construction, anywhere in the world, when you call on Procon to do the job.

PROCON *Incorporated*

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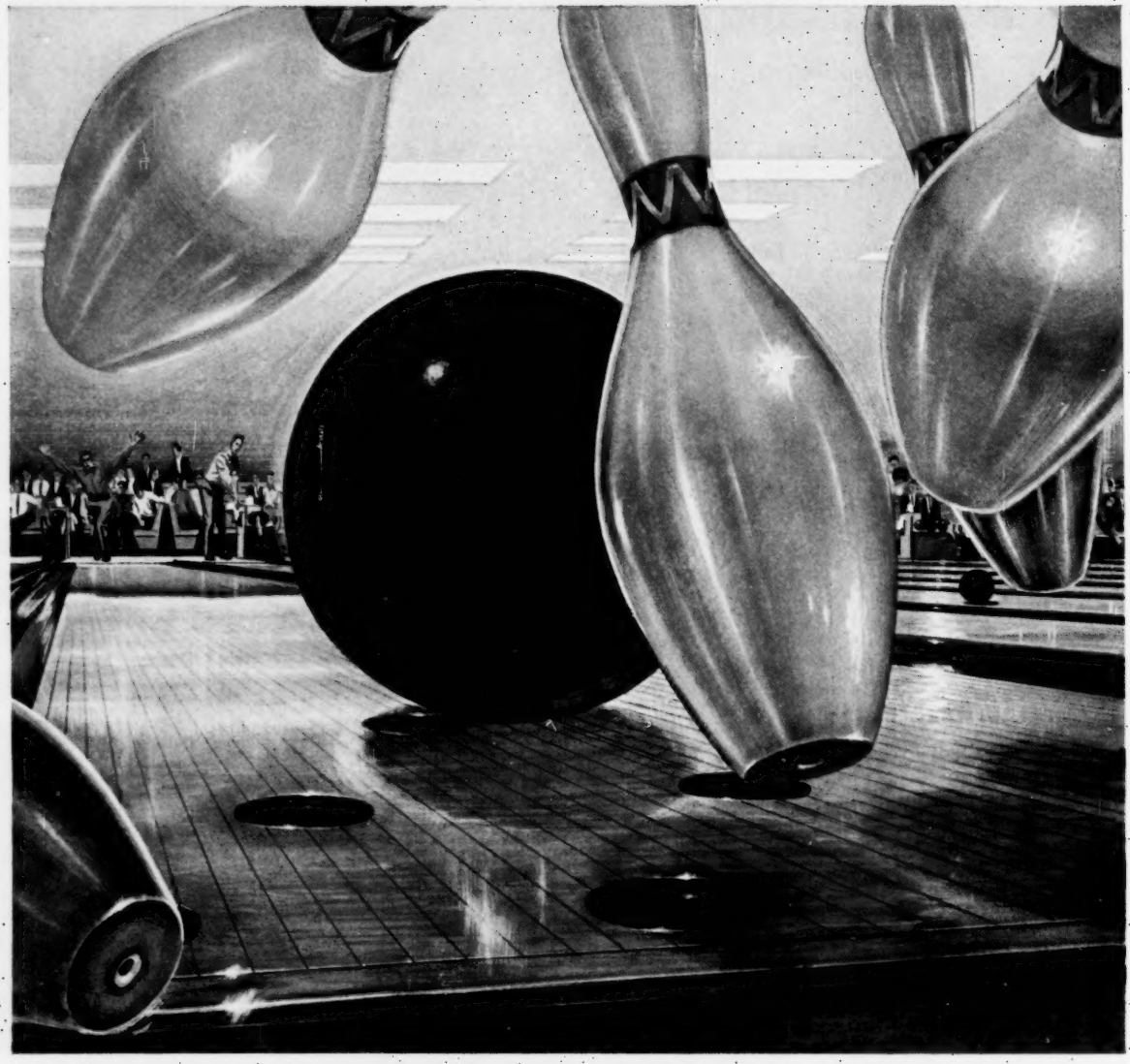
WORLD-WIDE CONSTRUCTION FOR THE PETROLEUM, PETROCHEMICAL, AND CHEMICAL INDUSTRIES



For the finest in finishes—

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FOR MANY YEARS, manufacturers of decorative and protective surface coatings have depended on Shell solvents and resins for quality and economy.

Shell's family of solvents assures you complete formulating flexibility . . . meets or exceeds highest standards.

Shell Epon® resins produce finishes that offer outstanding resistance to abrasion, impact and chemical attack.

In the production of alkyd resin and ester gum coatings, *Shell glycerine* provides outstanding quality and performance.

For information and technical literature on specific products, write us now.

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Mesityl Oxide
Methyl Ethyl Ketone
Methyl Isobutyl Carbinol
Methyl Isobutyl Ketone
Neosol® Proprietary Solvent
p-Tertiary Butyl Benzoic Acid
Secondary Butyl Alcohol

SHELL

Business Newsletter

CHEMICAL WEEK
August 16, 1958

Expansion news tops late-breaking developments this week.

Wraps are off the $135-million bauxite and alumina project now under construction in French Guinea (French West Africa) by FRIA Compagnie Internationale pour la Production d'Alumine. Olin Mathieson owns 53½% of this international organization, and has already invested most of its $21-million stake. Other owners: Pechiney and Ugine (26½%), AIAG (10%), and The British Aluminium Co. (10%). Long-term loans supplied $96 million. The owners can buy alumina from the company in proportion to their shares.

Pechiney will operate the plant, which includes bauxite mines and an alumina plant with initial capacity of 480,000 tons/year, expandable to 1.2 million tons. Production will start in '60, at the rate of 240,000 tons/year, will expand in "successive equal increases."

Stauffer Chemical and Shell Oil are "actively planning" a plant for producing chlorinated hydrocarbons through their jointly owned subsidiary, American Chemical Corp. (*CW Business Newsletter, April 19*). Present site choice is southern California. C. F. Braun and Co. (Los Angeles) is handling preliminary design studies.

Chemetron Corp. has broken ground for a $1.8-million liquid oxygen, nitrogen and argon plant alongside its industrial gas plant in Compton (Los Angeles), Calif. Initial capacity will exceed 30 tons/day, and can be raised. Startup is slated for early '59. National Cylinder Gas Division will operate the new California plant, also a liquid oxygen plant abuilding in Philadelphia.

Columbia Gas System is still aiming for ethylene production through its subsidiary, Columbia Hydrocarbon Corp., whose fractionating plant is scheduled for startup by Dec. 1 at Siloam, Ky. Newly appointed plant manager is an ethylene production expert formerly with Texas Eastman. Last year, Columbia and Commercial Solvents called off plans to jointly produce ethylene oxide and other hydrocarbons (*CW, Aug. 10, '57, p. 23*).

•

The final crop of company earnings reports is in this week.

• Food Machinery and Chemical Corp.'s second-quarter sales—$86.6 million—were up 2% from '57, though earnings were off slightly: $1.45/share against $1.51 a year ago. Sales and earnings for the six months were down 6% and 10%, respectively, compared with the first half of '57.

• Dow reports sales of $636.2 million for the fiscal year ending May 31, down from the $673.4 million—including Dobeckmun sales—chalked up last year. Profits were $46.1 million, off 15%.

• Olin Mathieson posted an after-tax net of $5.3 million for the second quarter, up 24% over the first three months but sharply under '57's record for the June quarter, $9.7 million. Sales dipped to $148 million, compared with $154.7 million last year.

• Pittsburgh Coke & Chemical's second-quarter profits slid to $233,000, down 80% from a year ago. Sales slipped to $11.3 million versus $13.3 million in '57.

• Lithium Corp., bucking the trend among nonferrous metals producers, chalked up first-half earnings of $408,000, an increase of 40%. The whopping boost is largely attributed to cost cutting measures, came despite the fact that sales totaled only $5.5 million, compared with $6.8 million in the first six months of '57. The company reports industrial sales now run "slightly ahead" of last year.

• G. D. Searle upped first-half sales to $16.4 million, a 7.6% increase. Profits rose to $3.7 million, compared with $3.3 million in '57.

Never-before revealed sales figures for Upjohn and Penick—both closely held drug firms—are published in the antibiotics economic report recently released by the Federal Trade Commission (*see also p. 69*).

Upjohn's '56 sales are listed as $107.9 million, its total antibiotics revenues at $22.6 million. And Penick, smallest of the companies surveyed, had '56 sales of $14.2 million, antibiotic sales of $912,000.

•

Union Carbide is again upping its stake in the nuclear industry. Last week, Carbide bought all the capital stock of Globe Mining Co., Wyoming uranium mine operator, along with about 150 uranium claims and 240 acres of fee leases. Carbide is considering building a mill in Wyoming if Atomic Energy Commission grants it a share of Wyoming's recently allotted 1,750 tons of additional capacity. Carbide now operates three mills in Utah and Colorado.

•

Federal court at Chicago has asked for a tax ruling on the latest proposal for settling the Government's antitrust suit against Du Pont and General Motors (*p. 25*). The lawyer representing GM's stockholders is scheduled to file his brief this week, and Justice Dept. will file its comments by Sept. 26.

•

Wage costs for pharmaceutical companies will likely rise somewhat as a result of Labor Dept.'s raising of wage floors for firms holding government contracts. Under provisions of the Walsh-Healey Public Contracts Act, Labor Secy. James Mitchell boosted the wage minimum from $1/hour to $1.20.

BRIEFS

on a new crystal form of benzoic acid ...a simple way to find a "new" intermediate...a monochlorobenzene that's 99.5% pure...why our caprylyl chloride is better than ever

New crystallized benzoic acid dissolves faster—is sneezeless

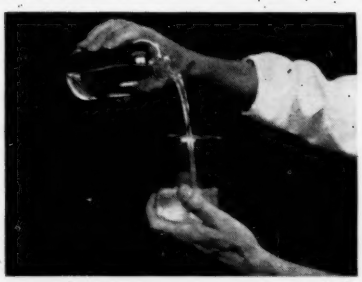
Were you ever present when a drum of powdered benzoic acid was being dumped?

Chances are you sneezed a lot, since the fines of this compound can irritate one's proboscis. Chances also are that it took some time to get the stuff to dissolve as the powder has a tendency to ball up.

We've done away with all that by developing a crystal form of benzoic acid. You can get it in both U.S.P. and Technical Grades.

The U.S.P. Grade assays 99.3% min. The Technical Grade assays at least 98.0%.

Check the coupon for full story. *P. S. You CAN still get the powdered form if you prefer.*



How to look for a "new" intermediate

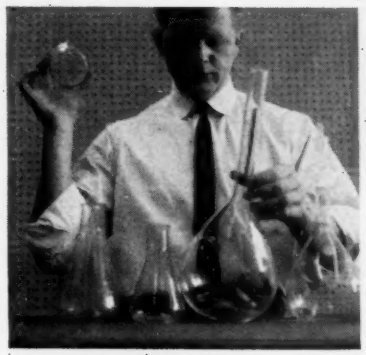
Ever spent weeks trying to develop a new intermediate for some project you are working on, only to find that the thing has been around all the time?

Let's say, for example, you're ferreting out a new polymerization modifier. All your work points to a mercaptan structure. One that freezes below 0°C. and boils over 100°C. You want a mobile liquid. Light color preferable. Little or no odor.

Now if you *were* looking for something like this you'd eventually find out that we've been making it all along. Goes by the name of lauryl mercaptan. The compound's formula averages out to $C_{12.4}H_{25.7}SH$.

Since the compound is already available in commercial quantities you'd save a lot of time knowing its whereabouts.

Just in case this hypothetical case ever does occur, it would be helpful if you had our technical data sheet in your tickler file. The coupon tells how to get one.



Looking for really pure monochlorobenzene—99.5% pure?

Cryoscopic methods show our regular monochlorobenzene to be typically 99.5% pure.

None of the other material present is more volatile than the *mono-* itself, so that after drying it distills completely within a 1°C. range including 132°C., its boiling point.

It's a clear, colorless liquid with a fairly pleasant odor. It's practically immiscible with water but dissolves readily in any organic solvent you're likely to use.

No need to worry about freezing, unless you want to work below *minus* 44°C. Specific gravity is 1.113.

There's more to tell and it's all on the data sheet offered in the coupon.

You can get better caprylyl chloride now

Because *our* suppliers have been able to improve their fatty acid processing, we are now able to get better caprylic acid than before.

The result is that Hooker caprylyl chloride is now 90 to 95% pure with only small quantities of the hexanoyl and decanoyl chlorides.

The compound has a typical chlorine content of 21.8%. 90% distills in the 183-212°C. range. The freezing point is below *minus* 70°C.

For the rest of the specs and other data, mark the coupon.

For more information, check here and mail with your name, title, and company address:

☐ Benzoic Acid ☐ Monochlorobenzene
☐ Caprylyl Chloride ☐ Lauryl Mercaptan

When requesting samples, please use business letterhead to help speed delivery.

HOOKER CHEMICAL CORPORATION
707-2 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Los Angeles New York Niagara Falls Philadelphia Tacoma Worcester, Mass.
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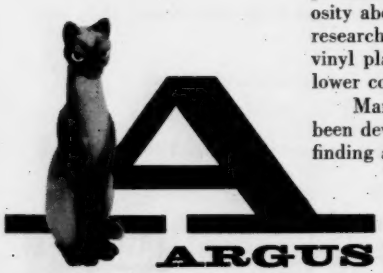
HOOKER CHEMICALS PLASTICS

CURIOSITY THAT'S BRED IN THE BONE



There's a hidden ingredient in every Argus product. It's the basic, bred-in-the-bone curiosity about your problems that enables Argus research to keep turning out better and better vinyl plasticizers and stabilizers at lower and lower cost.

Many of Argus' superior products have been developed, or improved, in the course of finding answers to specific technical problems posed by customers. The reason: every member of the Argus research staff is a recognized authority in the vinyl field.

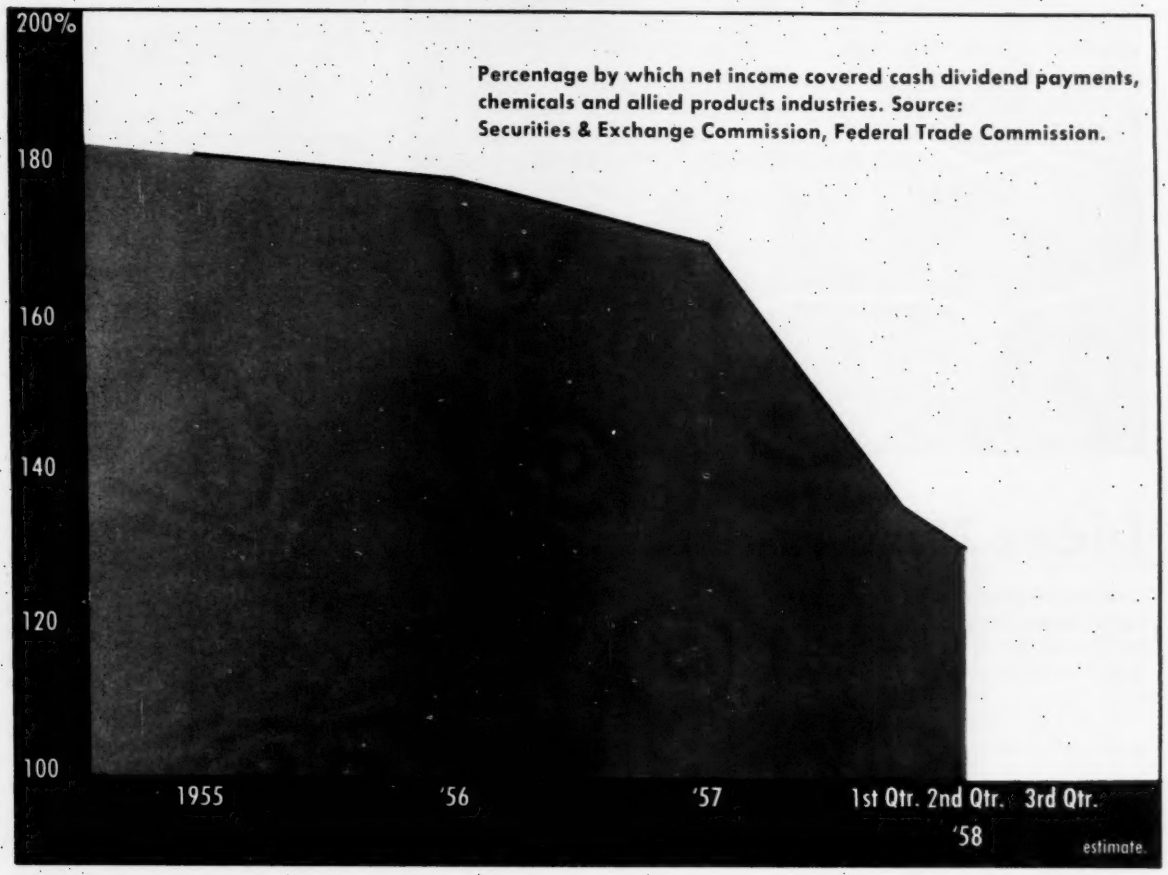
If you want the *right* answers, ask Argus. We'll find them for you in our regular line of Mark stabilizers and Drapex plasticizers — or in basic, original research done on your product by our Technical Service Staff. Write for technical bulletins and samples.

ARGUS CHEMICAL CORPORATION / New York and Cleveland

Main Office: 633 Court Street, Brooklyn 31, N. Y. Branch: Frederick Building, Cleveland 15, Ohio

Rep's.: H. M. Royal, Inc., 4814 Loma Vista Ave., Los Angeles; Philipp Bros. Chemicals, Inc., 10 High St., Boston; H. L. Blachford, Ltd., 977 Aqueduct St., Montreal.

EARNINGS COVER DIVIDENDS—BUT WITH LESS TO SPARE



Chemical Dividends Ride Out the Dip

The industry-wide earnings and dividend figures from which the chart (above) was derived typify the dilemma that many chemical firms have faced in past weeks:

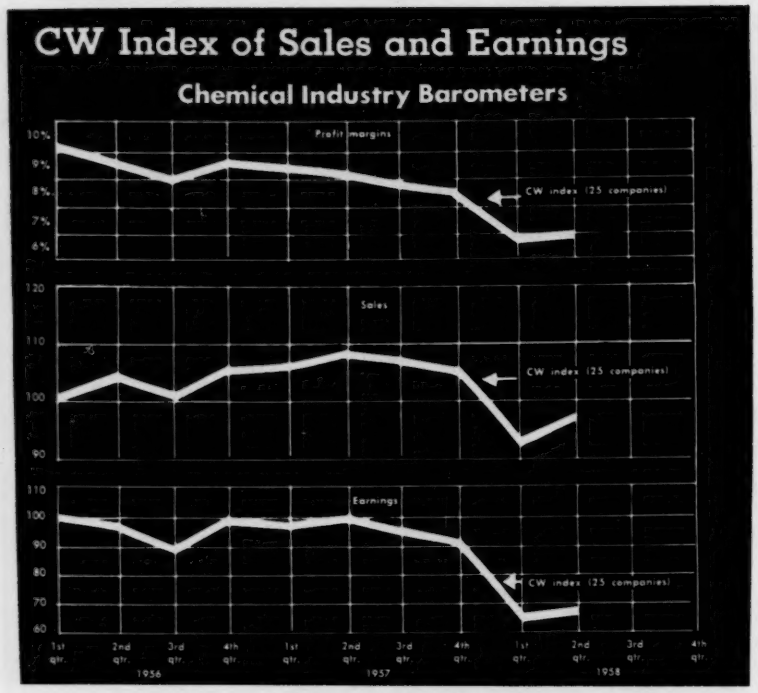
Can a company afford to continue its dividend payments at the high level of the past boom years at a time that earnings are sharply lower?

Each firm, with its own particular set of circumstances, has had to decide whether the maintenance of investor confidence through continuation of regular dividends is more important than the retaining of funds to finance expansion and modernization or to increase working capital to the point necessary to pay for major new sales efforts.

This week, as *CW* sales/earnings index (*p. 24*) pointed to a definite upward trend, it appeared that the calculated risk—that the recession would be a relatively short one—was a risk worth taking. Allied, Monsanto, Carbide and Dow, for example, have set third-quarter dividends at the regular levels, and Du Pont and Cyanamid will likely follow suit. In no case was any company's first-half earnings greater than 11% of the dividend payout.

Even Olin Mathieson, which rode out the worst of the recession before halving its quarterly common-share dividend to 25¢ last week, did so because of a decision to charge off $10 million worth of long-deferred "preoperating" expenses against third- and fourth-quarter '58 earnings.

Bolstering the confidence of most firms is a hefty cash cushion that even the recession has not flattened. During the first quarter of '58, chemical industry depreciation write-offs were $241 million, up 4% from a year earlier. And working capital was down less than 1%.



Index Mirrors an Upturn

Buttressed by data from late-reporting chemical companies, CW's quarterly index this week shows that the recession—though not completely spent—is surely fizzling out.

Sales and earnings, after sagging badly in the first quarter, started to rise again in nearly all segments of the industry—with the possible exception of metals. Incomes are still well under last year, but several executives say it looks as though year-end totals could be comparable to those of '57.

More Than Seasonal: The improvement is regarded as far more than seasonal. Both sales and earnings edged up, with earnings showing the biggest percentage gains. This is in contrast with the pattern of recent months, when sales kept pace but profits continued to slump.

In fact, profit margins are normally lower in the second quarter *(see index)*—which makes a surge at this time all the more significant.

Fourth Quarter Looks Best: As for the rest of the year, executives still aren't committing themselves. Unofficially, there is general agreement that the pinch will ease slowly from now on; most feel that the fourth quarter is sure to be the best of the year.

Third-quarter sales and earnings, reportedly picking up still more, will be especially significant. If they continue to climb, as expected, executives will be better able to gauge the speed of recovery and the feasibility of new expansion spending this year and next.

New Entry in Films

National Distillers & Chemical Corp. last week bought Textron's Kordite Division—and joined the list of producers getting closer to the consumer by purchasing a manufacturer of finished packaging films.

Distillers bought Kordite for an estimated $10 million, will operate it as a subsidiary without changing its name, personnel, or any other phase of its existing setup. A Distillers spokesman explained that the company will, among other things, provide a "testing ground" for new resins used in manufacturing packaging films.

Four Predecessors: Distillers, of course, is not the first to give the nod for such a vertical expansion. Last November, Monsanto acquired 50% of Plax Corp.—also a film maker. Acquisitions by Dow's Dobeckmun division, Carbide's Visking and Koppers' Durethane Corp. represent similar moves.

In addition, various big paper companies are expanding, or at least thinking of expanding, into polyethylene film.

Crown Zellerbach now has plans to market transparent polyethylene film under the name of Crown-Seal. The company is building a large new plant to manufacture it in Orange, Tex., adjacent to the Spencer Chemical plant that will supply the resin.

Two More Expansions: And Ludlow Paper Inc. (Needham Heights, Mass.), will expand its Homer, La., plant some 300%, with the chief product to be transparent films. It's also actively considering a new plant on land owned by Spencer in Orange, already has a resin supply contract with Spencer.

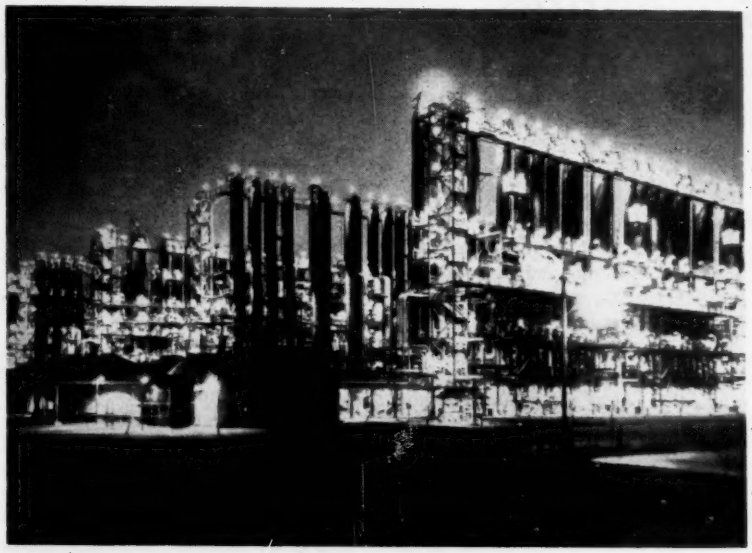
Mead Corp. (Dayton, O.), queried by *CW*, definitely confirmed similar marketing plans. Its recently acquired Lamex division (Norcross, Ga.) is a large producer of wax wrappers but will soon be producing and selling the competitive polyethylene film as well.

Initially, the big marketing targets for film makers may well be bread wrappers. This market has been called "fabulous" by at least two top executives who say it could easily hit 50 million lbs./year.

Another application, slated for later development, is in coating milk cartons to eliminate the chief consumer complaint: leakage. Work is already well under way with one type of specialized pint-size milk carton—Tetrapak—already on the market.

Numerous other potentially large-scale applications for transparent film are now being surveyed. Manufacturers say the film could capture most of the transparent wrapping market that, until now, has been largely dominated by versatile but costlier cellophane.

Moreover, polyethylene makers will push hard to garner this and other markets, since they provide an opportunity to cash in on admitted excess polyethylene capacity.



On Du Pont's purchases for AEC plant, a $1.8-million state tax bill.

Embroiled in Tax Disputes

Here's a new headache for companies operating government-owned plants: how to deal with state and local tax assessors who are now rushing to take advantage of recent Supreme Court rulings that would put federally owned plants on the tax roles.

At least three large chemical companies—Du Pont, Union Carbide and Dow Chemical—and various other industrial concerns are now involved in situations of this kind. In most cases, their government contracts would permit newly imposed state and local taxes to be passed along to the U.S. Treasury as additional operating costs; but under fixed-fee type of contracts, the private contractor might have to pay the levies out of its own pocket.

Profit a Criterion: The whole problem stems from Supreme Court decisions earlier this year that federally owned property is not immune from local taxes if it is being used by private companies for profit *(CW, July 5, p. 24)*. Among the first local tax officials to latch onto this new opportunity for boosting local tax revenues: J. L. Bruns, tax assessor of Jefferson County, Colorado. Bruns maintains that Dow, Air Products and Martin Co.—all operating government-owned defense plants near Denver—together owe the county about $2 million/year in property taxes *(CW, Aug. 9, p. 36)*.

In some instances, the federal government is interceding to try to block the local tax levies. Reason: potential impact on the federal budget. Pentagon lawyers estimate the extra cost would be as high as $250 million/year just to cover personal property taxes on military-owned inventories—and assessments on land, buildings and equipment could run higher.

Possible Loophole: Government lawyers working on these cases think they see loopholes in the Supreme Court's ruling. As they see it, the High Court implied that government property continues to be immune from local taxation if it can be proved that the property is being used to benefit the U.S. government, rather than the private contractor.

Among major cases pending:

- At Columbia, S.C., State Attorney General T. C. Callison is pressing Du Pont for payment of $1.8 million, which he says is due on state sales and use taxes from operation of the Atomic Energy Commission's big "H-bomb" plant near Aiken. Du Pont and the U.S. Justice Dept. are asking the federal court to keep Callison from taking any step to enforce collection.
- A similar tax has been levied by Tennessee's state government against Union Carbide Nuclear Co., operator of AEC's Oak Ridge plant. Here also, the Justice Dept. has filed a brief on the company's behalf.
- Trial is scheduled for next month in Buffalo, N.Y., on a local $20,000 property tax against ACF Industries on operation of another AEC plant.

New GM-Du Pont Plan

A new proposal to end the government's antitrust suit against Du Pont and General Motors—and generally similar to the plan advanced by Du Pont—was filed in Chicago last week.

The suggestion was made by Andrew Dallstream, a Chicago attorney appointed by Judge Walter LaBuy to serve as *amicus curiae* ("friend of the court"). In trying to satisfy the Supreme Court in a way least costly to the 192,500 holders of Du Pont's common shares, Dallstream recommends:

- That Du Pont be allowed to retain ownership of its GM shares.
- That voting rights on the GM shares be "passed through" to the ultimate stockholders of Du Pont and of the two Du Pont-connected holding companies, Christiana Securities and Delaware Realty; except that officers of these companies should not be allowed to vote GM shares.
- That the Du Pont companies be enjoined from attempting to influence or control GM; and that Du Pont be enjoined from seeking preferential treatment in selling to GM.
- That Du Pont be allowed to create a new class of common stock, which would represent an interest in Du Pont but not in GM; and that Du Pont stockholders be allowed to exchange some or all of their present shares for the new Du Pont stock plus pro rata apportionments of Du Pont's GM shares.
- That, otherwise, Du Pont be left free to sell any or all of its GM shares, subject to court approval.

Dallstream is generally critical of the disvestiture plan put forward by the Justice Dept.

Even if the court decides in favor of forced divestiture, Dallstream says, it should not issue such an order while there is "reasonable prospect of remedial tax legislation, such as the Frear bill" *(CW Washington Newsletter, June 14)*.

Tonic in Tariff Change

Chemical companies perennially concerned about competition in the form of imports from low-wage countries are expected to be nearly as satisfied as the Eisenhower Administration is with the new trade and tariff measures passed by Congress last week. The bills continue the trend toward lower tariff barriers that has been obvious for many years.

The House-Senate compromise on extending the Reciprocal Trade Agreements Act to 1962 will give the President authority to cut tariffs by as much as 20%, though by no more than 10% in any one year. Still, it appears certain that this bill will not result in any major changes in the degree of foreign competition U.S. firms must face.

And another Congressional compromise—on amending the 1921 antidumping law—will give domestic producers an easier chance to prove injury from cut-rate imports—and thus win compensatory tariff boosts.

Little Chemical Impact: Under the new reciprocal trade bill, neither producers nor traders of any large-volume trade item such as chemicals will be significantly affected by any downward changes in present tariff rates or trade restrictions until at least 1962, government authorities aver.

And under the revised antidumping law, domestic producers will find broader legal basis for arguing that specific competing foreign imports are being sold in the U.S. at less than "fair value." If the Secretary of the Treasury agrees, the case will go to the Tariff Commission for a finding of actual or potential injury to the domestic producer. The new law includes a provision that in the case of a three-to-three tie vote by the six-member commission, injury will be presumed to have occurred. And the Secretary of Treasury will now have broader authority to (1) compare foreign and domestic prices on which he computes the punitive antidumping duty, and (2) compare competing foreign and domestic "classes of goods."

No New Trade Pacts: Government sources are fairly definite that no new trade pacts will be signed during the four-year extension of the quarter-century-old reciprocal trade law. And even minor adjustments in current trade agreements will take at least two years to put into effect.

Furthermore, the new law gives domestic producers broader opportunities to obtain protection. But since most of these provisions are permissive rather than mandatory, their usefulness to domestic industry will depend largely on the trade policy of the Administration that is in office.

Essence of the new provisos:

- "Escape clause" proceeding before the Tariff Commission—the traditional means for obtaining relief for domestic industry—will be easier to file for. Any company or "group of employees" may petition for help. And if the Tariff Commission endorses the plea but the President rejects it, Congress can override the President's decision with a two-thirds majority vote in each house.
- If the President agrees to raise tariffs under an escape-clause action, he may boost them more than ever before—by as much as 50% above the 1930 Smoot-Hawley rates instead of over the decidedly lower duty schedules of 1945.
- When the Tariff Commission sets a "peril point" as the rate below which an import duty may not be cut on any given product, and the current duty is below that rate, institution of an escape-clause petition will be automatic. No positive action must be taken by industry.
- There's new and stronger language in the law's national security section, providing a basis for trade restrictions on grounds that a domestic industry is essential to national defense. In considering appeals by producers, the newly formed Office of Defense and Civilian Mobilization is required to take into account several new factors. These include the effect of prevailing import levels on an industry's "economic well-being," and whether "substantial unemployment" has been caused by imports.

Non-Tariff Factors: In swinging behind the final version of the reciprocal trade bill, many legislators were reasoning that the law of supply and demand and various other factors are likely to be even more important than tariff rates in determining future volume and dollar value of U.S. foreign trade.

And most congressmen have come to believe that future trade levels will depend more on general economic conditions — productivity, consumption patterns, dollar reserves, foreign currency holding and "liquidity"— than on trade agreements and tariff schedules.

Steady Trade Rise Expected: Perhaps the most important meaning of the renewal of the reciprocal trade law—and also the European nations' "common market" agrement—is that both are aimed at reducing trade barriers and expanding world commerce generally. Economists now anticipate a steady rise in international flow of goods, provided there's no all-out war or other disruptive event.

Chemical trade, for example, is expected to increase. Specialty chemicals—whether German, French, Italian or American—will find new markets overseas.

But these predictions are long-range. The most important immediate effect of the new reciprocal trade program is as a symbol. It tells the rest of the world that the U.S. intends to follow a basically liberal trade policy, and encourages the European nations to follow suit.

Cancer Patent Rules

Pharmaceutical companies that discover valuable products while working on government anticancer research contracts will be able to get patents on those products and will have first chance on production and distribution.

The policy is expected to encourage companies to sign up for research projects under an anticancer program for which H-E-W now has $10 million available. And a similar policy probably will be applied to research contracts on mental health and other major diseases.

Under the policy, settled on last week, the U.S. Surgeon General can license other companies to produce privately discovered, U.S.-financed drugs only in special cases. Before such licensing, the government would have to give 90-day notice, hold formal hearings and consultations—to show that the drug's developer is unable to meet "public need" for the product.

COMPANIES

Hooker Chemical Corp. (Niagara Falls, N.Y.) has decided to carry on the operations of recently acquired Shea Chemical Corp. as Hooker's Phosphorus Division. Earlier, Hooker started its switch toward decentralized, divisional organization by setting up the Durez Plastics Division. The company says it is contemplating establishment of other divisions, either on a product-line or geographic basis.

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H. K. Porter Co. (Pittsburgh) is offering to buy 125,000 shares of Thermoid Co. common stock at $11.50/share. This would give Porter more than 50% interest in Thermoid, maker of rubber, asbestos, and products for the textile industry.

•

Dow Chemical Co. (Midland, Mich.) is consolidating the sales organizations of its Textile Fibers Dept. and of its Dobeckmun Co. Division's Lurex yarn unit. Dow says this move to expand its marketing activities in the textile field will be particularly helpful in launching Zefran, the acrylic "alloy" textile fiber that it began producing commercially last month.

•

Mallory-Sharon Metals Corp. (Niles, O.) has acquired the titanium tetrachloride plant built by Stauffer Chemical Co. at Ashtabula, O., last year. Earlier this year, National Distillers & Chemical Corp.—one-third owner of Mallory-Sharon—had leased the plant with an option to buy it (*CW Business Newsletter, May 17*). The newly acquired plant supplies titanium tetrachloride by pipeline to Mallory-Sharon's titanium sponge plant nearby; thus, the company says, it now has integrated facilities for turning out titanium mill products.

•

Permutit Co. Division of Pfaudler Permutit Inc. (New York) has acquired the flotation equipment business—including Colloidair Separator trademark and manufacturing rights—previously owned by Bulkley-Dunton Pulp Co.

EXPANSION

Oxygen: Air Products, Inc. (Allentown, Pa.), is building a new, 22-million-cu.ft./month oxygen plant to serve U.S. Steel Corp.'s Clairton, Pa., Works. The unit will include storage systems for both gaseous and liquid oxygen to meet intermittent demands of the steel works and to ensure continuing oxygen supplies during periods of oxygen plant maintenance.

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Ammonium Nitrate: Ketona Chemical Corp. will build additional facilities at its Ketona, Ala., plant to produce prilled ammonium nitrate and ammonium nitrate-limestone. The 75-tons/day plant is due for completion early next year, is said to be the first plant in the Southeast and the second in the U.S. to produce the nitrate-limestone mixture. Design and construction contract has been awarded to Chemical & Industrial Corp. (Cincinnati). Ketona—which now produces anhydrous ammonia, nitric acid and nitrogen solutions—is jointly owned by Alabama By-Products Corp. (Birmingham) and Hercules Powder Co. (Wilmington, Del.).

•

Surface-Active Chemicals: Waverly Chemical Co. (Mamaroneck, N.Y.) is buying a 15-acre industrial site on the eastern shore of the Hudson River near Phillipstown, N.Y., and plans to start construction of a 12-million-lbs./year chemicals plant this fall. The $400,000 plant is scheduled to be in operation by next summer. Products: surface-active agents, including emulsifiers, dispersants, penetrants and wetting agents for cosmetic, pharmaceutical and other industrial uses.

FOREIGN

Chemicals/Western Hemisphere: Bayer Foreign Investments Ltd. (Toronto)—a subsidiary of Farbenfabriken Bayer AG. (Leverkusen, Germany)—has arranged a medium-term $20-million credit from a group of six banks in New York, Toronto, and Zurich, Switzerland. The loan will be used for consolidation of debts relating to past expansion and also to finance further expansion of Bayer operations in North, Central and South America, Africa and Western Europe.

•

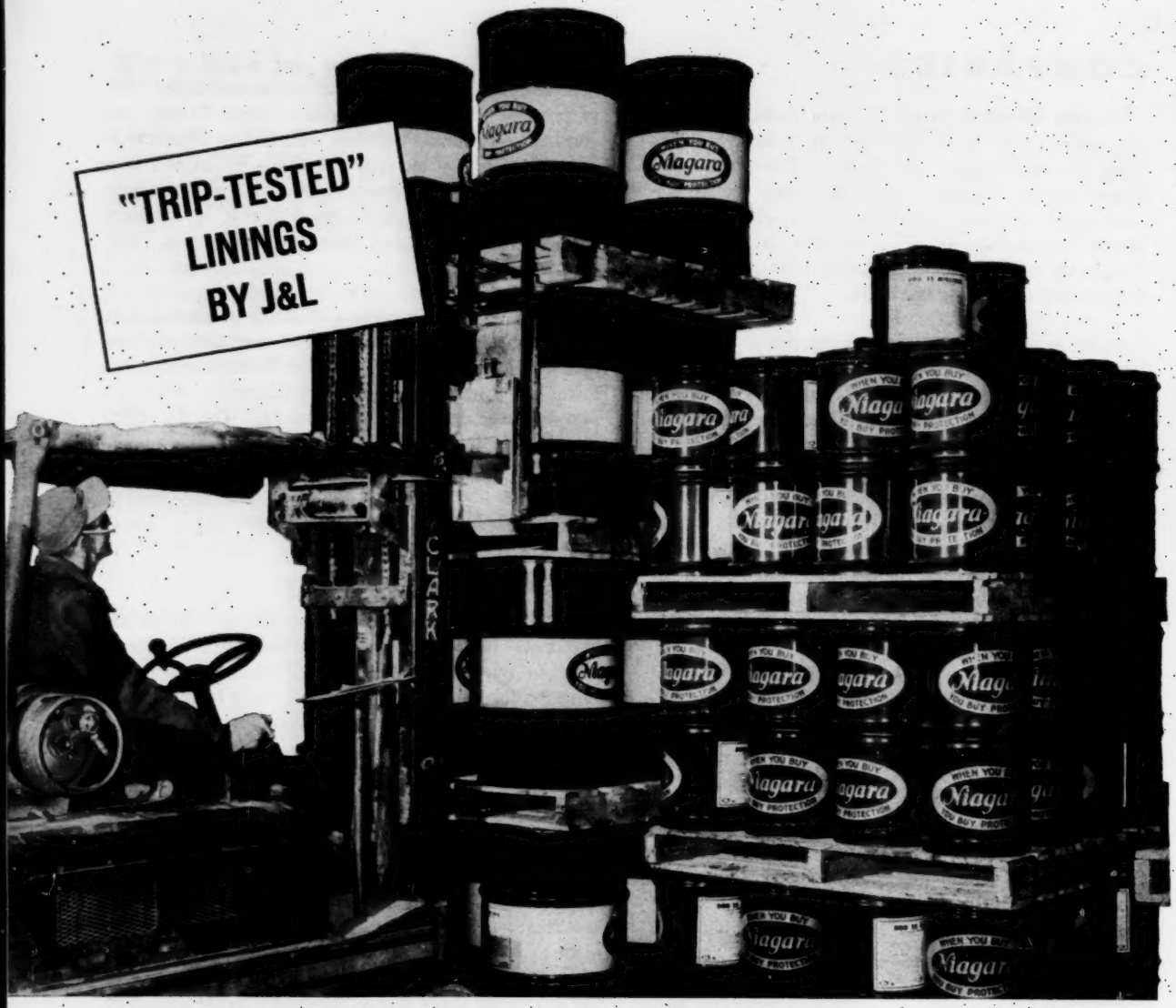
Phthalic Anhydride/Europe: Three European affiliates of Reichhold Chemicals, Inc. (White Plains, N.Y.) are increasing their capitalization to finance major plant expansions for increasing and diversifying output of basic chemicals and synthetic resins. In Switzerland, Oel & Chemie Werk AG. is planning a 3,000-tons/year phthalic anhydride plant; and in Germany, Reichhold AG. will double its phthalic capacity. In France, Reichhold-Beckacite S.A. will increase its capacity for production of various chemicals. Parent company President Henry Reichhold says most of the financing will come from sale of stock in the affiliate companies, in their respective countries.

•

Chemicals/Japan: Two Japanese-American chemical companies are operating under new names this month.

Monsanto-Kasei Chemical Co.—jointly owned by Monsanto Chemical Co. (St. Louis) and Mitsubishi Chemical Industries Ltd. (Tokyo)—has changed its name to Mitsubishi Monsanto Chemical Co.

Shinko Acrylic Fiber Co. Ltd.—owners of which include Chemstrand Corp. (Decatur, Ala.), Mitsubishi Rayon Co. (Tokyo) and one other Mitsubishi concern—is now Mitsubishi Vonnel Co., Ltd. Vonnel is the tradename of the acrylic fiber to be made at Otake.



HOW J&L PIGMENTED PHENOLIC LININGS

"Eliminate product spoilage for Niagara Chemical"

"Container corrosion has been eliminated by switching to J&L lined containers," reports Niagara Chemical Division of Food Machinery and Chemical Corporation. "The problem of product contamination, a common one when packaging liquid insecticides, fungicides and herbicides, has been solved by using these J&L *trip-tested* containers."

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Washington Newsletter

CHEMICAL WEEK
August 16, 1958

Hip-shooting critics of the U.S. patent system got their answer this week in "Economic Review of the Patent System" by Johns Hopkins University Political Economy Prof. Fritz Machlup. He flatly condemns as "irresponsible" the demands of such recent critics as Columbia University Prof. Seymour Melman, who wants the patent system abolished (*CW, July 12, p. 63*), although Machlup admits there's probably need for "reform."

Machlup's prescription: appoint a "team of well-trained economic researchers and analysts" to evaluate how the patent system is working, look into its effectiveness as an instrument for promoting industrial progress and competition. Machlup says only such a team effort will be able to obtain "enough information to reach competent conclusions on questions of patent reform."

Melman and Machlup found a publisher for their views in Sen. Joseph C. O'Mahoney's Senate Patents Subcommittee. The senator leans toward the "reform" approach—says he'll try to come up with proposals next year to beef up the Patent Office's authority to crack down on fraudulent claims—such as those charged in last week's Federal Trade Commission antitrust complaint against five antibiotics producers (*see p. 69*).

•

Eisenhower's post-Sputnik plan to boost defense spending has been given a solid nudge by Congress. The lawmakers have tacked on $815.8 million to the Pentagon's fiscal 1959 appropriation request, bringing the total new appropriation close to $41 billion—$5 billion over the sum voted last year for defense.

The extra funds will provide for construction of four additional nuclear-power, Polaris IRBM-armed submarines (upping the scheduled fleet to nine vessels) and production of additional troop-carrier aircraft and jet tanker planes.

•

The food additive control bill is threatened by one of its best friends. Rep. James Delaney (D., N.Y.) is threatening to bottle up the industry-backed, Administration bill in the House Rules Committee, a move that would kill it for this year.

Delaney's complaint is that the bill omits an anticancer finding in safety tests required of manufacturers of new additives.

It will soon cost more to market new pesticide products. The Food & Drug Administration's new schedule calls for fees averaging 2.5 times those manufacturers now pay to establish official use tolerances under the Miller Pesticide Act. The new rates, which took effect Aug. 7, will add thousands of dollars to the industry's annual bill for these services.

Washington Newsletter

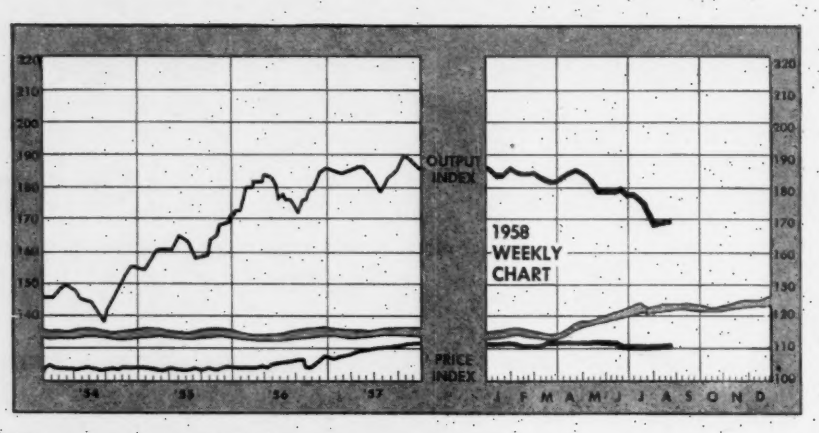
(Continued)

Manufacturers will have to deposit $3,750 with each application seeking two or more tolerances, plus $250 for each raw agricultural commodity on which a tolerance is requested (the $250 deposit doesn't apply to the first 14 such commodities covered in the application—but begins with the fifteenth. Since 1954, manufacturers have paid $2,500 and $100, respectively, for this work; and since then, over 1,450 tolerances or exemptions have been set.

The new fees were ordered following an FDA cost survey, which showed that the previous levies fell far shy of covering time spent in checking on the scientific data submitted by manufacturers to back up their requests for tolerances on pesticide residues in foods. Because Congress ordered FDA to set fees covering all costs, the agency ruled it is not required to hold public hearings on the new rates.

•

A major expansion of the government's saline water program was urged this week by the House Government Operations Committee, after a year's study of the six-year-old program. Among the recommendations—some of which are already getting attention from Congressional legislative and appropriations committees: more basic research, including amendments to remove restrictions on support of "new ideas"; increased liaison with industry and other private researchers here and abroad, including cost-sharing deals with companies for building large test facilities and new water-conversion equipment; construction of pilot plants to test all known processes; acquisition of a federal seashore laboratory.



Business Indicators

WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	170.0	169.0	180.0
Chemical Week wholesale price index (1947=100)	110.7	110.7	110.6
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	44.18	43.63	45.01

MONTHLY

Foreign Trade (million dollars)	Exports: Latest Month	Exports: Preceding Month	Exports: Year Ago	Imports: Latest Month	Imports: Preceding Month	Imports: Year Ago
Chemicals, total	114.2	120.2	124.2	25.0	24.3	25.2
Coal-tar products	9.2	8.2	6.9	3.6	4.1	4.8
Industrial chemicals	18.1	15.3	20.5	7.3	6.7	6.9

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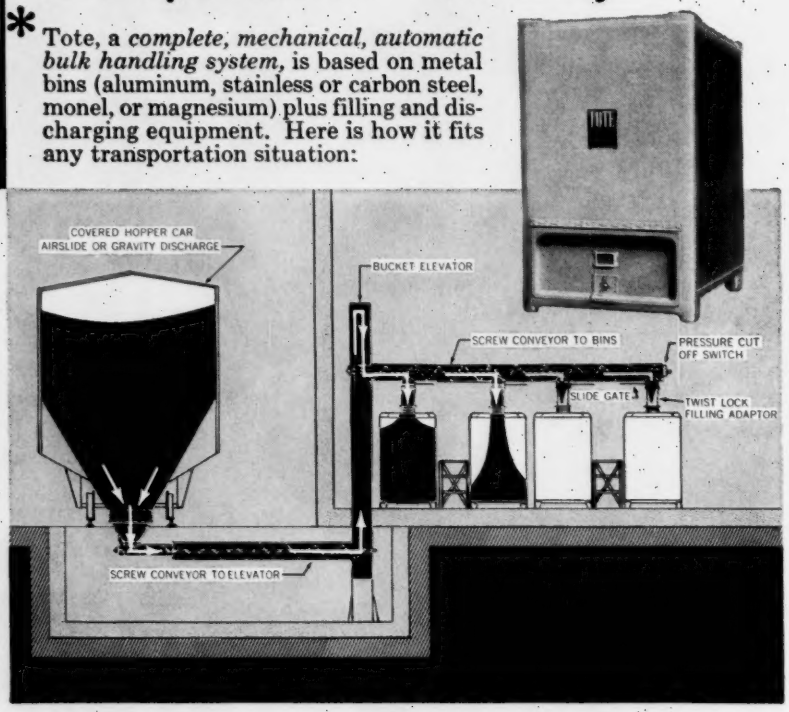

BULK HOPPER CARS

Tote System can be adapted readily to the use of bulk covered hopper cars, of the gravity discharge or Airslide type, when these are furnished free by the shipper or by the railroad.

The drawing above shows how quickly and easily mechanical or pneumatic car unloading and Tote filling equipment moves the contents of the car into Tote Bins. The Bins can then be weighed and placed in your warehouse. (Only with Tote can you weigh your incoming material as a check against your supplier's invoice and also for inventory purposes.)

One man can handle the entire operation — unloading the car, filling, weighing, warehousing the Bins, and moving previously filled Bins from warehouse to discharge stations. In many installations, 100,000 pounds of material are being moved through the complete cycle in less than four hours by one man.

CONTAINER CARS

This special railroad car carries 26 Bins which can be filled by your supplier while still on the car. At your plant or team track, one man with a fork lift can unload the car in 35 minutes. A mileage allowance of 3.7 cents is paid for every mile this car travels.

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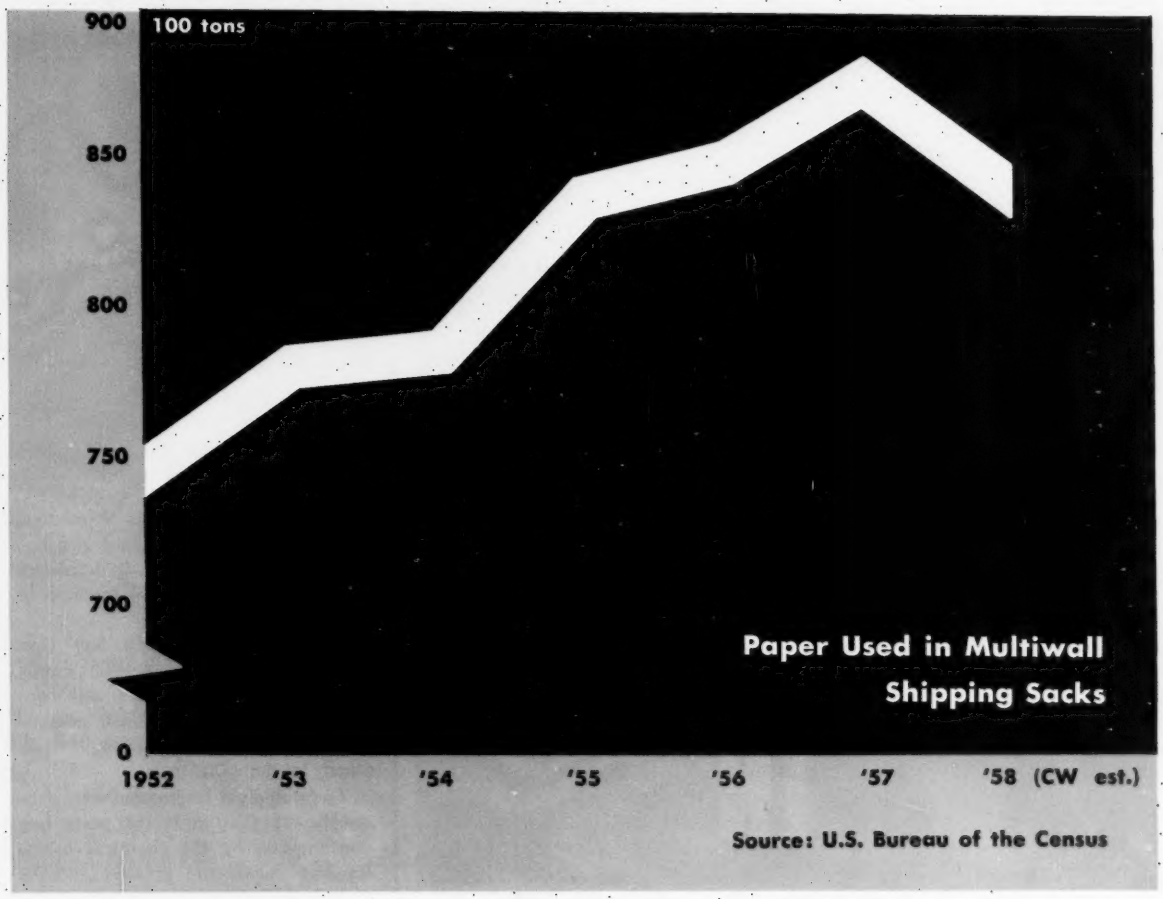


Chemicals Bulge the Multiwall Bag Market

Shipments of multiwall paper bags, important containers for the chemical and allied industries, this week are beginning to accelerate after a slow first half.

Encouraged by the pickup in business, West Virginia Pulp and Paper Co. has just begun commercial production of the multiwalls at its new Torrance, Calif., plant.

The increase was also enough to spur Continental Can Co. into speeding up work on its now-building bag plant in Hodge, La. Continental, a newcomer multiwall supplier, now hopes to have its plant in operation no later than the latter part of this year.

Government figures on production of paper for shipping bag consumption are important barometers of the multiwall business. Last year, paper channeled into this outlet hit a record 873,000 tons. That's 17,000 tons more than was used the previous year, and a 120,000-ton gain over '52's 753,000 tons. This year, however, paper output for shipping sack use will probably add up to only 850,000 tons. Reasons:

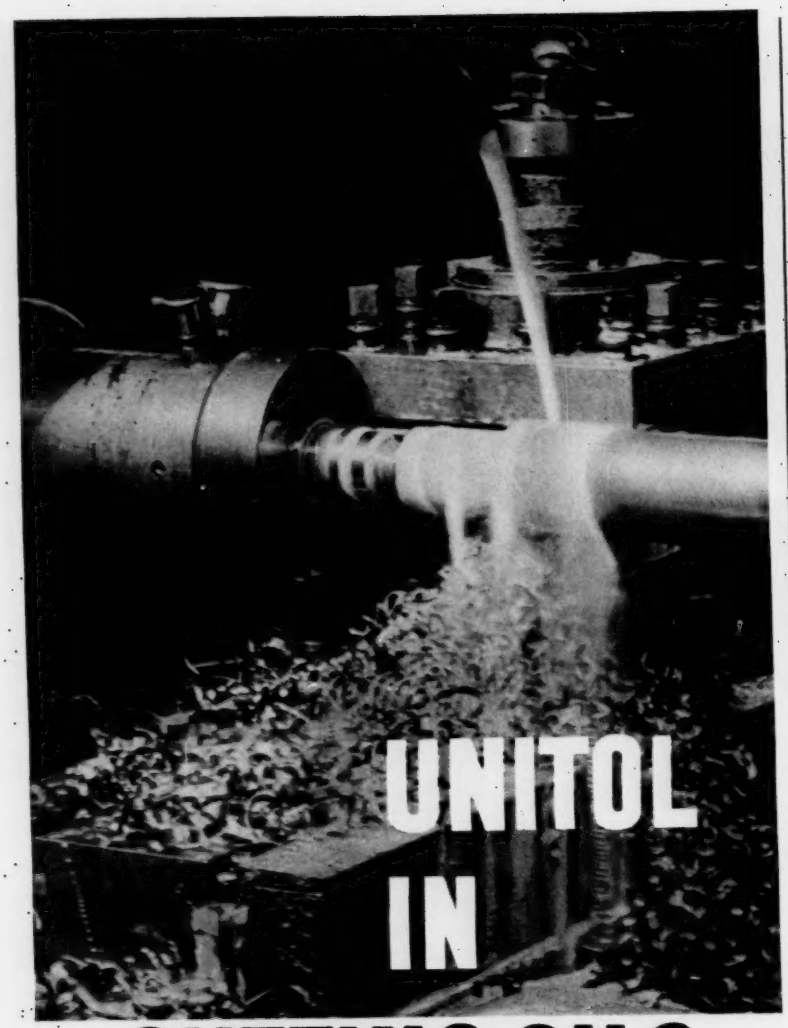
- Reduced shipments, during first-half '58, of fertilizer and building materials.
- A broad industry trend toward bulk shipments. It has reduced the bag requirements of many of the biggest users of the multiwalls.
- Buildup of large inventories of containers during the latter part of '57 in anticipation of a kraft paper price rise.

Recent spurt in private housing construction, however, and stepped up demands at the close of the fertilizer season, helped deplete inventories.

Net effect is that this year, production of multiwall paper containers will hit some 2.5 billion units, bulk of which will be for chemical and allied industries.

Chemicals Lead: Here's the consumer breakdown: this year, well over 35% of multiwall paper bags will be used for shipping fertilizers, drugs and various chemical raw materials (*see table*). In '50, less than 31% was channeled into this major outlet.

Of the estimated 875 million multiwall bags likely to be bought by the chemical industry this year, some 600 million will go for fertilizers. Spokesmen for fertilizer makers point



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End-Uses of Multiwall Paper Shipping Sacks

(Estimated percent of total uses)

	1950	1958
Chemicals, drugs	31%	36%
Agricultural, Food	31%	35%
Building materials	29%	19%
Minerals	8%	8%
Miscellaneous	1%	2%

out that this figure would have been somewhat larger but for two important factors:

- A trend toward bulk shipments.
- A trend toward higher concentration of plant nutrients in fertilizers has leveled off the actual tonnage of fertilizer consumed.

But industry followers feel that trend lines are turning, that multiwall paper bag producers will continue to look upon fertilizer industry as their most important single customer in the CPI.

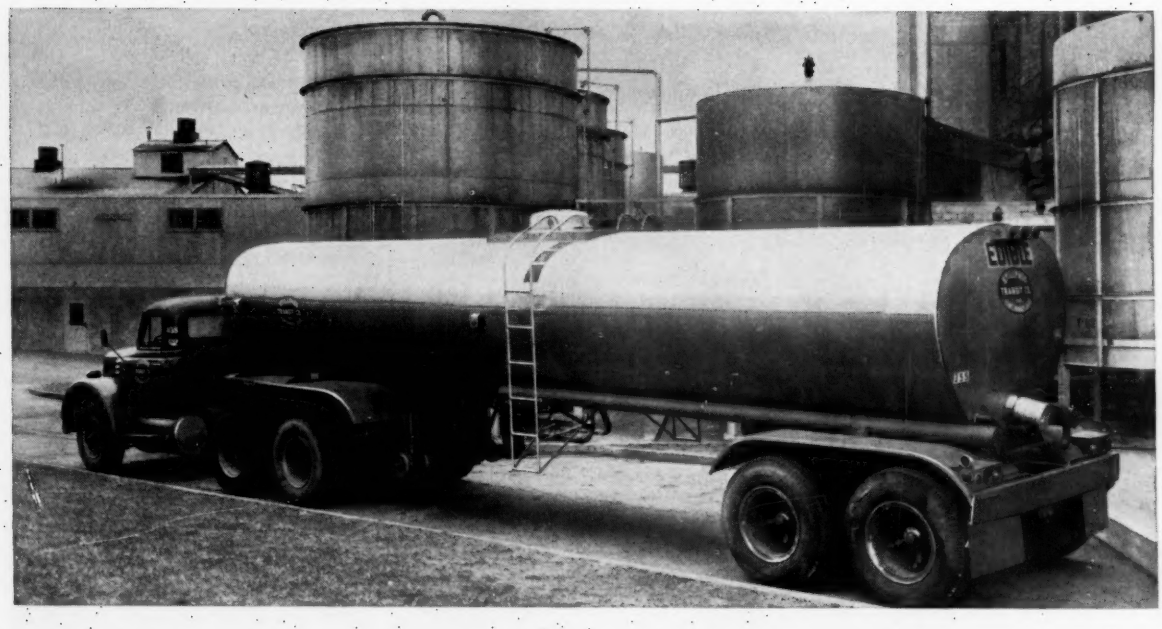
Technological Improvements: Producers say that in recent years bag consumption by the chemical industry has shown the greatest rate of growth. Important factors behind this growth are these improvements: better protection against moisture contamination, greater strength, special linings and coatings to protect paper from chemical action of the product being shipped.

Today, such chemical products as polyvinyl chloride, carbon black, formaldehyde, insecticides, paint materials, drugs, dyes, soda ash, resins, detergents, synthetic rubber are being shipped in the multiwalls. And the market here has just been scratched. Says St. Regis Paper: "As more research is carried out, more and more diversified chemical products will be moved in these paper sacks."

Two recent examples:

- Aluminum foil multiwall bags.
- Stretchable paper bags.

And more research is under way. West Virginia Pulp and Paper last month showed off its new multiwall packaging laboratory at Charleston, S.C. Union Bag-Camp Paper Corp.

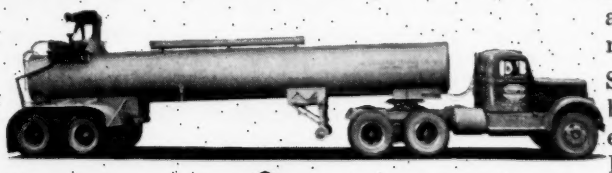


Cost-Conscious Professional Chemical Haulers Specify FRUEHAUF Tank-Trailers!

Stillpass Provides Safe, Economical Chemical Hauls With Stainless Steel Fruehaufs

The example set by professional chemical haulers like Stillpass Transit Co., Inc., of Cincinnati, can be of value to *any* shipper of liquid chemicals. The Stillpass fleet of 55 highly specialized Tank-Trailers is almost 100% Fruehauf-built.

Stillpass specializes in safe, economical transportation of liquids, moving nearly 200,000 tons annually throughout the Eastern half of the United States. Many of its tank units are stainless steel Fruehaufs like the one shown above, equipped with insulated and high pressure steam jackets for safe movement of liquids that could solidify.



This unit is being loaded at the Cincinnati Plant of Emery Industries, Inc., producer of various industrial chemicals, including fatty acids and plasticizers. Emery insures the purity of their high-quality products by storage in corrosion resistant tanks and moving in stainless steel Trailers. Emery and their customers realize many other advantages with direct bulk shipment via Tank-Trailer—principally the economy derived from the elimination of numerous individually-loaded drums.

In its stainless Fruehauf tanks Stillpass also makes sanitary hauls of numerous edibles, hot oils, resins, acids, and plasticizers. Steel units like the one left are employed for various clean petro-chemicals, naphthas, mineral spirits, jet fuels, and light fuel oils.

Stillpass specifies Fruehauf chemical transports because of their modern, scientific design, and the economy of standardized Fruehauf running gear. Follow the example of the professionals in shipping *your* bulk liquids via Fruehaufs.

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DU PONT LUDOX® colloidal silica provides slip resistance, anti-soil properties

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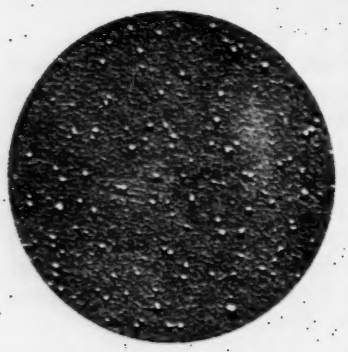
Some chemists find "Ludox" useful as an anti-slip ingredient in floor wax. The hard, transparent silica particles create a snubbing action as foot pressure pushes them into the softer wax globules.

Others use "Ludox" as a soil retardant on rugs and upholstery fabrics because the minute silica particles fill microscopic imperfections on the fibers . . . give dirt no place to hide.

Still others add "Ludox" to elastomeric systems to increase adhesion and toughness of latex deposits and decrease tack. Large available surface area and small particle size give "Ludox" unusual modifying properties.

Your use for Du Pont "Ludox" may be one of these, or a new use as yet unexplored. Be sure to evaluate "Ludox" in terms of your own development work! Just write address given below for more information.



PHOTOMICROGRAPH (50,000 x) shows discrete particles of "Ludox". Each particle is a clear, hard, transparent sphere approximately 15 millimicrons in diameter.

DU PONT
REG. U.S. PAT. OFF.

▶ Write now for this free 20-page booklet describing the properties and uses of "Ludox". E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., N-2533, Wilmington 98, Delaware.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

also revealed plans for a new product-development laboratory at Hoboken, N.J. Work will include research and development on multiwall paper sacks.

Construction Demand Slump: Another important, but slowly backsliding, consumer of multiwalls is the construction and building industry. This year, less than 19% of total bags made will be used here. Just eight years ago, shipment of construction materials, mainly cement, took some 29% of the total. Big factor behind this setback: again, the trend toward bulk shipments.

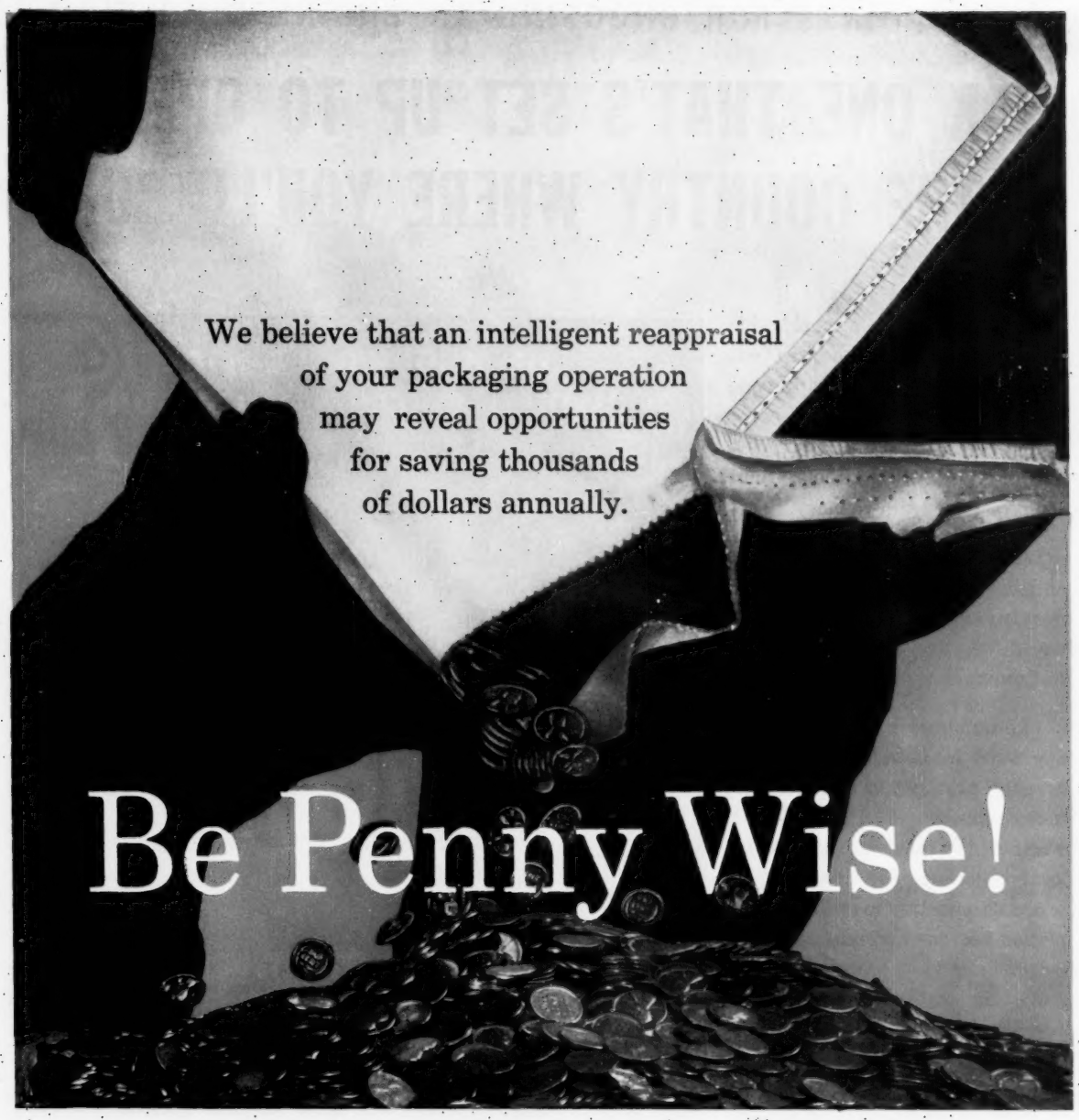
Although construction has been booming in recent years, most of the nation's building dollar was going into such projects as highways, public buildings, dams and development of large-scale housing units. For such huge undertakings, it is economical, of course, to ship such materials as cement in bulk quantities. Nevertheless, the generally healthy rise in cement output has helped to curb the decline in use of multiwall paper bags for construction materials.

Agricultural, Food Demands: Second most important multiwall outlets are the agriculture industry, for animal feed, and the food industry, for packing flour, salt and sugar. This year, some 35% of shipping sacks made will go into these industries. Although the demand by the food industry has slackened with the trend toward bulk shipments, need for the paper bags by the animal feed industry has more than made up the loss.

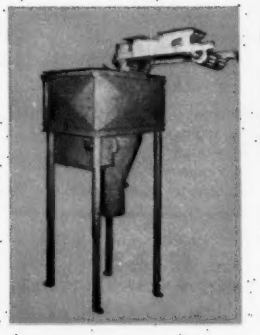
Another important buyer of multiwall containers is the mineral industry. It takes about 8% of the bags to ship such items as oil well drilling compounds, cryolite, alumina, talc, graphite, etc. Here again, bulk shipments are beginning to limit the multiwall bag market.

Miscellaneous uses of multiwall paper shipping sacks account for 2% of total demand, have doubled in the past eight years. Producers of ice, grease absorbents, pastes, wood products, adhesives, hardware, etc., find that the paper containers hold up well in transit, are ideal for shipping their products.

Outlook: Bolstered by rising demands from chemical and allied industries and from farmers and food packers, the multiwall bag market is looking ahead to good times.



IN BUYING MULTIWALL BAGS NO SAVING IS TOO SMALL TO IGNORE!



THE KRAFTPACKER Open Mouth Bag Filling Machine, for free-flowing material, automatically saves pennies, too, through higher production and greater accuracy. Requires a lower investment and maintenance cost than any other automatic machine of its type in use today!

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Show me how to save on my multiwall bag packaging.

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ADDRESS .....

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PRODUCT MFD. .....

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PICK ONE THAT'S SET UP TO OPERATE IN THE COUNTRY WHERE YOU'LL BUILD

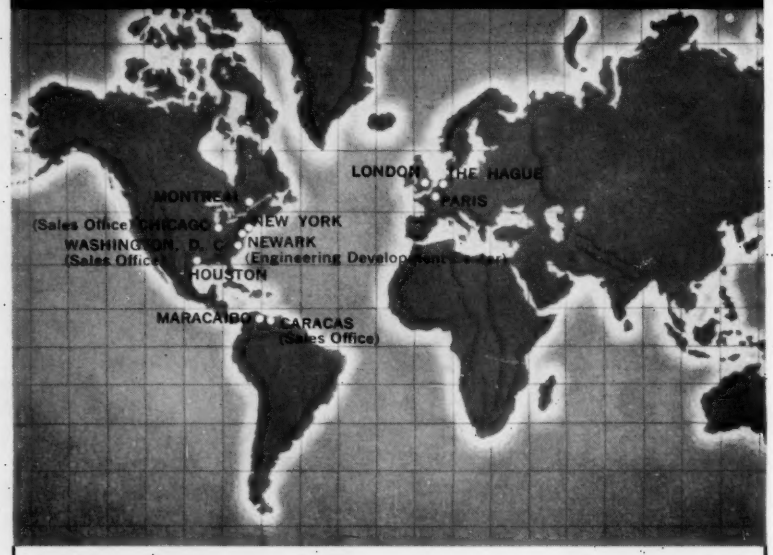
Choose a firm with a world-wide organization — one staffed, equipped and experienced to cope with the local situation wherever you plan to construct your new chemical plant, petrochemical plant or petroleum refinery.

Lummus' staff of highly trained employees is located in seven engineering offices throughout the world. This brings five advantages to Lummus customers:

(1) Lummus is set up to operate with local currencies, can arrange payment to suit the customer's desires. (2) Purchasing is world-wide, takes advantage of local conditions. (3) Construction proceeds smoothly to on-time completion because Lummus is expert in training local working people and using local sub-contractors all over the world. (4) Lummus keeps up to date on technical developments everywhere in the world. And (5), each Lummus office can draw on the technical experience and planning ability of all the other offices.

Call in Lummus when you begin plans for your next plant.

LUMMUS' WORLD-WIDE, WORLD-WISE ORGANIZATION



ABOVE — Location of Lummus offices and subsidiaries around the globe

BELOW — A few of the far-flung projects designed and constructed by Lummus.

CHEMICAL PLANTS

Project	Location
Tetramer, Cumene and Phenol-Acetone Units, Societe des Chimiques des Derives du Petrole	Antwerp, Belgium
Sulfuric Acid Plant, Inland Chemicals Canada Limited	Fort Saskatchewan, Alberta, Canada
High Pressure Acetylene Chemicals Plant, General Aniline & Film Corp.	Calvert City, Kentucky, U.S.A.
Phenol-Acetone Plant, Progil-Electrochimie	Pont de Claix, France
Ethylene Oxide Plant for Petrochemicals Ltd.	Partington, England

COMPLETE REFINERIES

Irish Refining Co., Ltd.	Cork, Ireland
Burmah-Shell Oil Company	Bombay, India
Societe Generale des Huiles de Petrole	Dunkirk, France
Compañia Shell de Venezuela	Cardon, Venezuela
Standard Oil Company (Indiana)	Mandan, North Dakota, U.S.A.

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Mexico's new petrochemical industry will feed from this existing (and proposed) gas and oil complex.

Ahead: Chemical Boom Below the Border

Will the booming Mexican chemical industry, now a tempting investment for U.S. process companies, be as tempting after December, when the newly elected government takes office? Last week, through interviews with industry and government officials, CW reporters in Mexico came up with a raft of encouraging answers to that question.

Mexico's president-elect, Adolfo Lopez Mateos, favors use of foreign capital to develop his country's key industries and resources, has voiced hope that he will be able to raise U.S. and other foreign investments in Mexican industry to the $1-billion mark early in his six-year term.

Present level of all U.S. investments in Mexico is about $800 million, $100 million having been added last year.

Mexico's chemical industry has received a significant share of U.S. dollars, along with substantial sums of other foreign and domestic capital. U.S. private investments in that country's chemical industry now total $90 million. According to a recent report by Mexico's National Economy Dept., 24.8% of all capital investments in that country during the first half of '58 went into the chemical trade. Wood products and metals trailed with 17% and 16%, respectively. A major share of future investments are certain to go into chemicals and petrochemicals under the government's push for a well-rounded chemical industry that will result in minimum reliance on imports.

And throughout Mexico, in every section of the chemical industry, U.S. companies are either moving in or making large expansion moves *(see table, p. 40)*.

Weaknesses Apparent: Mexico's chemical industry represents an investment equivalent to $230 million, is composed of 650-750 enterprises employing 25,000 and has annual sales of about $160 million. It suffers from these shortcomings: its organic branch is little developed, petrochemicals are just now becoming a factor in local production, sizable quantities of key chemicals must be imported and domestic fertilizer production falls far short of needs, observers say.

In '56, for example, domestic fertilizer output totaled 216,217 tons, while imports amounted to 133,068 tons, cost $13.3 million. Other imports same year: $5.2 million worth of coal-tar dyes, $7.4 million worth of antibiotics, $8.2 million in synthetic resins and plastic materials and $11.5 worth of insecticides and disinfectants. Domestic chemical pro-

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KESSLER CHEMICALS

PLANNED OR NEWLY COMPLETED PLANTS
(figures in millions of dollars)

U.S. Firm	Product	Approx. Cost	Location
Pennsalt	caustic soda	3.4	Santa Clara
Union Carbide	electrodes	—	Monterrey
Du Pont	titanium dioxide	6.0	Tampico
Celanese	synthetic fibers	—	——
Monsanto	soap industry materials	2.4	——
Glidden	titanium dioxide	6.0	——
Olin Mathieson	caustic soda	2.5	Monterrey

duction in '56 was up 10.6%, but chemical imports were up 26%.

Petrochemicals, the Comer: As late as last year, Mexico's petrochemical industry was a thing of the future. Everything hinged on the government's unannounced policy toward capital investments *(CW, March 30, '57, p. 28)*. It was not known, for example, to what extent Petroleos Mexicanos (Pemex), the government oil monopoly *(see map)*, would enter petrochemicals. Pemex's long-time director general, Antonio Bermudez (who is expected to be replaced by Mexico City's mayor, Ernesto Uruchurtu), had said that petrochemicals would be a wide-open field for private capital investment. Another Pemex official had told *CW* that the agency would stay out of fertilizers because it lacked capital.

Now the government's policy is known, and apparently the door is open for foreign capital. Government-owned Banco Nacional Financeira and Pemex are set to go all-out to encourage petrochemicals production, and this means foreign capital must be encouraged.

But, most likely, the key that will open the door to Mexico's petrochemicals industry will be labeled "merge with Mexican capital." One high-placed Mexican government official told a *CW* reporter, "If an American or any foreign chemical company wants to come into Mexican petrochemicals and is willing to take on Mexican capital or Mexican partners, it will be welcomed with open arms." He added that because of nationalistic fears on the part of local producers (that giant foreign concerns will crowd out Mexican companies), the government will try to persuade foreign companies to form joint ventures with Mexican capital, possibly with the government itself. Such Mexican government-private foreign capital ventures are already working successfully in the chemical field, and Du Pont's Tampico titanium dioxide plant *(see table)* will go into business as a joint venture with Mexican capital.

And now the Mexican government is pushing fertilizer production. Banco Nacional and Cia. Mexicana de Credito Industrial and local private capital are financing a $6-million fertilizer plant at Salamanca—site of a Pemex refinery. The government-operated fertilizer company, Guanos y Fertalizantes, will also put up a plant near Pemex's coastal refinery at Minatitlan.

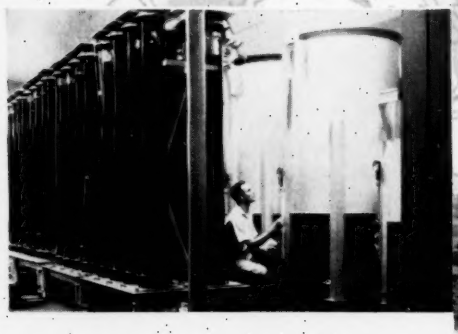
Mexican businessmen told *CW* reporters that the government's new liberal policy toward petrochemicals investments assures cordial treatment to those companies willing to get into segments of petrochemicals production that the government feels need stimulation. But foreign companies that are exporting those products to Mexico, they say, will get the order to "come in or get out," once local production is sufficient. It will be part of the Pemex drive, they add, to eliminate as many chemical and petroleum imports as possible.

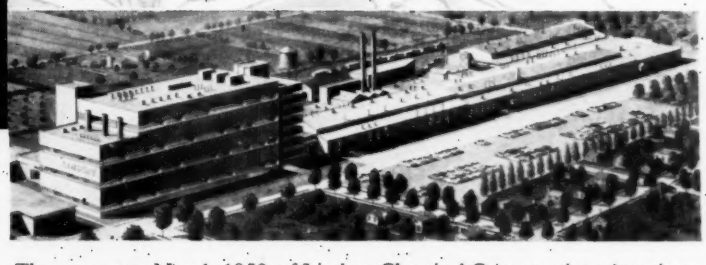
Petrochemicals production is expected to spring up in areas where Pemex is expanding refinery capacity and in the vicinity of the agency's sprawling pipeline complex *(see map,*

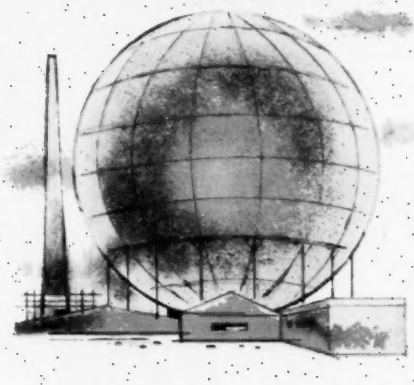
LINDSAY

Thorium, Rare Earth & Yttrium Chemicals

IMPORTANT ADDITIONS TO TRONA'S* CAPABILITIES AND SERVICE







The merger on May 1, 1958, of Lindsay Chemical Company into American Potash & Chemical Corporation joined two pioneering names already in the forefront of new chemical technology. Lindsay is the largest known producer of thorium, rare earth, and yttrium chemicals. Their greatly expanded production facilities have made these materials available at *dramatically reduced* prices in gram to carload quantities. The enormous potential of Lindsay's products – with applications in carbon arc lighting, reactor control materials, optical products, glass, textiles, paints, high temperature alloys, and many other areas – reflects American Potash & Chemical Corporation's traditional policy of expanding its service to industry. Lindsay's products supplement AP&CC's lithium, boron, cesium, rubidium, and other new chemicals now available. Years of accumulated experience by the Lindsay division's technical staff is at your service. Let us show you how this experience can aid you in your process or new product development. *Address inquiries to:* LINDSAY CHEMICAL DIVISION, American Potash & Chemical Corporation, West Chicago, Illinois.

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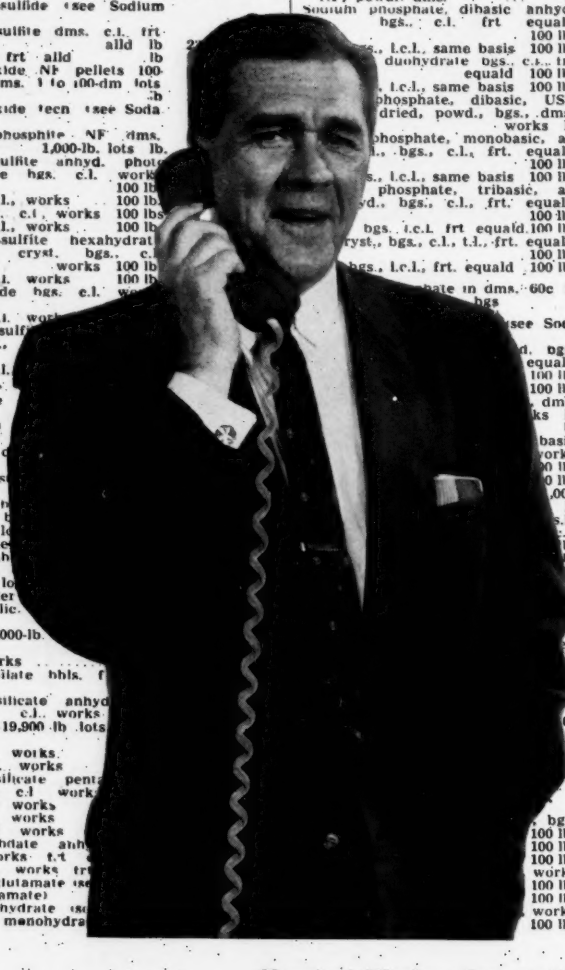
(Prices from OPDR 6-16-58)

Soda ash dense, 58%, paper bgs., c.l., works 100 lbs 1.90 —
paper bgs. l.c.l. stock pts 100 lbs 3.00 4.77
bulk c.l. works 100 lbs 1.60 —
Light, 58% paper bgs., c.l., works 100 lbs 1.85 —
paper bgs. l.c.l. stock pts 100 lbs 3.95 4.72
bulk c.l., works 100 lbs 1.55 —
Soda caustic flake 76% dms c.l. works, frt. equald 100 lbs. 5.20 —
Liq. 50% sellers tanks works dry basis 100 lbs 2.80 —
50% rayon type sellers tanks [illegible] 100 lbs. 2.80 3.00
73%, sellers' tanks, works, dry basis 100 lbs. [illegible] —
Soda, caustic, liq., 73%, rayon type, sellers' tanks, works, dry basis 100 lbs. [illegible] 3.10
[illegible] 76% dms. [illegible] 100 lbs. 4.80 —
Soda sal conc. bgs. c.l. works 100 lbs 2.50 —
bgs. smaller lots works 100 lbs 2.80 —
Sodium acetate anhyd., bgs., c.l., dlvd E lb. 14½ —
bgs., l.c.l. same basis lb. 16½ —
NF, 60% gran. dms. c.l., works lb 15½ —
dms., l.c.l., works lb 17½ —
Sodium alginate, NF white powd. dms. 300 lbs or more lb 93 —
Sodium p-aminosalicylate, dms. 100-lb lots or more, frt adjusted lb 2.76 —
Sodium antimoniate, bgs., c.l., dlvd. E lb. .25½ —
bgs., l.c.l., dlvd. E lb. .27 —
Sodium arsenate, 60% arsenic pentoxide, dealers, dms., ton or more, works lb. .26 —
dms., less than ton lots, works lb. .26½ —
Sodium arsenite 90% pink powder 75% arsenious oxide, dealers, dms., ton lots or more, works, lb. .17½ —
dms., less than ton lots, works, lb. .18 - .19
Sodium ascorbate, dms. 25-50 kilo lots kilo. 10.00 —
dms., 10-kilo lots kilo 10.35 —
dms., 5-kilo lots kilo 10.75 —
dms., 1-kilo lots kilo 11.00 —
bots. 500-gram bots kilo. 11.50 —
Sodium benzoate, tech. c.l. t.l., frt. alld lb. .35 —
dms. l.c.l. same basis lb .39 —
USP, c.l., t.l. frt. alld lb .38 —
ton lots same basis lb. .43 —
1,000-lb lots, same basis lb .45 —
Sodium bicarbonate USP gran., bgs c.l., works 100 lbs 2.95 —
bgs. l.c.l. works 100 lbs 3.85 —
USP, powd., bgs. c.l. works 100 lbs 2.55 —
bgs. l.c.l. works 100 lbs 3.45 —
Sodium bichromate gran. bgs. c.l., t.l. works lb 13 —
bgs. l.c.l. works lb 13½ 14¾
Sodium bifluoride bbls c.l works frt equald lb 17½ —
bbls. l.c.l. same basis lb 1990 —
Sodium bisulfate bulk c.l works 100 lbs 2.00 —
dms. c.l., frt. equald 100 lbs 3.00 3.60
dms. l.c.l. frt equald 100 lbs 3.50 4.10
Sodium bisulfite anhyd. bgs., c.l. works 100 lbs 5.00 —
bgs., l.c.l., works 100 lbs. 5.45 —
Soln., 35° bbls., c.l., works 100 lbs. 1.70 —
bbls. l.c.l. works 100 lbs 2.20 —
Sodium borate (see Borax)
Sodium bromide, USP gran., dms., works lb. .40 —
Sodium carbonate, cryst. monohydrated (see Soda sal)
Sodium carbonate monohydrated, bgs. c.l. works 100 lbs 3.10 —
bgs. l.c.l. works 100 lbs 3.50 —
Sodium carboxymethyl cellulose (see CMC)
Sodium chlorate cryst. 350-lb. dms., c.l. works lb. .09 —
dms. l.c.l. works lb .09½ 10½
Sodium chlorate in 100-lb. dms. only, ½c per lb higher
Sodium chloride (tech (see Salt)
Sodium chloride USP gran. bgs lb .05 —
Sodium chlorite tech. dms. c.l. works lb. .58 - —
dms., 20-dm. lots or more, works, lb .66 —
dms smaller lots works lb .70 73
Sodium chloroacetate tech. dms. c.l. works lb .27 —
dms. l.c.l. works lb .28 —
Sodium chromate anhyd. fib dms. c.l. t.l. works lb 14¾ —
fib. dms. l.c.l. works lb 15¼ 16½

Sodium chromate, tetrahydrate, bgs., c.l., t.l., works lb. .1015 —
bgs. l.c.l lb .1065 1190
Sodium citrate anhyd. dms lb .62 —
NF VIII, gran. dms lb 26½ 27½
USP XIV gran dms lb 29½ 30½
Sodium citrate USP powd prices ½c higher
Sodium cyanate dms. 1,000-lb lots, works lb .85 —
dms. smaller lots works lb .90 1.10
Sodium cyanide flake 96-98% dms. c.l or 20,000-lb lots lb .193 —
dms. over 1,000-lb tots lb .203 —
dms 100-lb to 1,000-lb lots lb .213 —
Gran sodium cyanide 1c higher
Sodium diacetate 33-35% acidity 250 lb dms works lb .15 —
250-lb dms l.c.l works lb 15¾ —
Anhyd. dms c.l. works lb .18 —
dms. l.c.l works lb 18¾ —
Sodium dimethyl dithiocarbamate, 40% soln., dms., c.l., t.l., frt. alld., 100% basis lb. .42 - .52
dms., l.c.l., t.l.l., same basis lb. .47 - .52
tanks, same basis lb. .38 - —
Sodium ferrocyanide bgs. 10-ton lots lb. 13½ —
bgs. smaller lots lb .14 —
Sodium fluoride white, 97% 6b dms. c.l. works, frt. equald lb .1390 —
6b dms. l.c.l. works, frt. equald lb .1490 —
Sodium formate bgs. c.l. works 100 lbs 7.00 —
bgs. l.c.l works 100 lbs 8.65 —
Sodium gentisate 100-lb fib dms. lb 5.50 —
Sodium gluconate refd. dms lb .84 —
Tech., dms., bgs. lb. .37 - .39
Sodium hydride powd. dms. works lb 1.90 2.75
Sodium hydrosulfide (see Sodium sulfhydrate)
Sodium hydrosulfite dms. c.l. frt alld lb 2[illegible]
dms., l.c.l. frt alld lb
Sodium hydroxide NF pellets 100-lb dms. 1 to 100-dm lots lb
Sodium hydroxide tech (see Soda caustic)
Sodium hypophosphite NF dms. 1,000-lb. lots lb.
Sodium hyposulfite anhyd. photo grade bgs. c.l. works 100 lb
bgs., l.c.l., works 100 lb
Tech., bgs. c.l. works 100 lbs
bgs., l.c.l., works 100 lb
Sodium hyposulfite hexahydrate pea. cryst. bgs.. c.l. works 100 lb
bgs. l.c.l. works 100 lb
photo grade bgs. c.l. w[illegible]
bgs. l.c.l. work[illegible]
Sodium hyposulfite tech.,
bgs., l.c.l.
Sodium iodide,
Sodium lactate
sodium lauryl
dms., l.c.l., c[illegible]
tanks dlvd
Sodium metabisulfite
sulfite)
Sodium metaph[illegible]
gran. b[illegible]
bgs., ton lo[illegible]
bgs., smalle[illegible]
Sodium metah[illegible]
bgs.,
bgs., ton lo[illegible]
bgs., smaller
Sodium metallic[illegible]
Fused, 18,000-lb
tanks, works
Sodium metanilate bbls. f[illegible]
Sodium metasilicate anhyd c.l., works
bgs. 6,000-19,900 lb lots
dms. c.l. works
dms., l.c.l. works
Sodium metasilicate penta bgs. c.l. work
bgs. l.c.l. works
dms. c.l., works
dms. l.c.l works
Sodium molybdate anh works t.t
Cryst dms works fr
Sodium monoglutamate (se dium glutamate)
Sodium monohydrate (se carbonate monohydra

Sodium naphthionate, bbls lb .70 - —
Sodium nitrate dom., crude, bgs., c.l. works ton. 48.75 - —
bulk, c.l., works ton. 45.25 - —
Sodium nitrate, imp. 100-lb. bags., c.l., Atl., Gulf, Pac., whse. ton. 49.75 - —
bulk, c.l., same basis ton. 46.25 - —
Sodium nitrite USP bbls., c.l., works frt equald 100 lbs. 9.00 - —
bbls. l.c.l. same basis 100 lbs. 11.00 - —
Sodium orthosilicate conc. dms., c.l., works 100 lbs 6.70 - —
dms. l.c.l. works 100 lbs 7.05 7.65
Sodium orthosilicate hydrated, flake, bbls. c.l. works 100 lbs 5.65 - —
bbls. l.c.l. works 100 lbs 7.60 7.90
Sodium oxalate 98% bgs. works 100 lbs. 12.35 - —
Sodium para aminobenzoate (see Sodium p-aminobenzoate)
Sodium para aminosalicylate (see Sodium p-aminosalicylate).
Sodium pentachlorophenate, briquets bgs. c.l. works, frt. equald lb .26 - —
bgs. l.c.l. same basis lb 27½ - 34
Pellets bgs. c.l., same basis lb 26 - —
bgs. l.c.l., same basis lb 27½ 34
Sodium pentachlorophenate, powd., bgs., dms., c.l., same basis lb. .25 - —
bgs. dms. l.c.l. same basis lb 26½ - 33
Sodium pentachlorophenate, 20,000 lbs., min. truckloads ¼c per lb over carlot prices
Sodium pentobarbital, USP, dms., 100 lbs. or more lb. 6.00 - —
Sodium perborate NF, tech., bgs., c.l. works lb .19 - —
bgs. l.c.l. works lb .21 - —
Sodium peroxide dms c.l. t.l. dlvd E of Miss lb .20½ - —
dms l.c.l. same basis lb .21 21
Sodium phenobarbital, USP, 100-lb. dms lb. 3.75 - —
Sodium phenolsulfonate, USP (X, gran., dms lb. .50 - .51
NF, powd., dms. lb. .53 - .54
Sodium phosphate, dibasic anhyd., bgs., c.l. frt equald 100 lbs. 7.95 - —
[illegible], l.c.l., same basis 100 lbs. 8.35 - 9.40
duohydrate bgs., c.l., frt equald 100 lbs 7.60 - —
[illegible], l.c.l., same basis 100 lbs. 8.10 - —
phosphate, dibasic, USP, dried, powd., bgs., dms., works lb. .19 - .20
phosphate, monobasic, an-, bgs., c.l., frt. equald, 100 lbs. 9.00 - —
[illegible], l.c.l., same basis 100 lbs. 9.40 -10.00
phosphate, tribasic, an-, bgs., c.l., frt. equald. 100 lbs. 9.05 - —
bgs. l.c.l. frt equald 100 lbs 9.45 -10.05
[illegible], bgs., c.l., t.l., frt. equald. 100 lbs. 4.60 - —
bgs., l.c.l., frt. equald 100 lbs. 5.00 - 5.75
[illegible]ate in dms. 60c to bgs
[illegible] (see Sodium
[illegible], bgs., equald. 100 lbs 11.10 —
100 lbs. 11.85 -12.35
dms., lb .36 - —
lb .37 .39
basic, works, 100 lbs 7.81 —
0 lbs. 9.21 - 9.71
,000- lb. .78½ - —
lb. .81½ - —
lbs 2.35 —
lbs 4.10 4.35
bs. 4.35 - 4.60
bs 4.75 4.90
s 5.35 5.60
E of Miss., and Va., Ala., ex E of 100°, and Vt. in zones. Daven k E of 98° nn Mo. tex. N C., S C., E of 100° tex. La and Miss Kan Neb W W of 100° ing El Paso; Nev., N M.,
bgs., 100 lbs. 5.70 - —
100 lbs. 6.20 - —
100 lbs. 5.00 - —
works 100 lbs 5.35 —
100 lbs. 5.50 - —
works 100 lbs. 5.85 - —



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which includes built or proposed gas and oil lines). The Isthmus of Tehuantepec near the Minatitlan refinery will likely be the site of a cluster of plants, for example, and there should also be activity in petrochemicals in the area around Irapuato and Salamanca, north of Mexico City. The proposed 606-mile natural-gas pipeline from Ciudad Pemex will terminate in that area.

Pros and Cons of Investment: Mexico's economy is one of the soundest and stablest in Latin America. Its gold and dollar reserves are at a reassuring level, industrial growth has been kept within reasonable limits and inflation has been contained. Raw-material resources are good, power and water supplies are good, the railroad has been rehabilitated and there's an integrated national highway system. Modern marketing and merchandising facilities exist and a fast-growing population is expected to reach 33.3 million by '60.

Basic deterrents to foreign investments in Mexico, the U.S. Dept. of Commerce feels, are embodied in that country's Federal Constitution of '17 and subsequent legislation.

The constitution declares the Mexican government is owner of "all minerals or substances . . . which form deposits of a nature distinct from the earth itself" and also of almost all surface and subsurface waters. Exploitation of forests is restricted to Mexicans and Mexican companies. Aliens and natives can obtain concessions to work mineral deposits (other than monopolized petroleum) or utilize water; but, as a condition, aliens must abide by Mexican law and forego diplomatic intervention in disputes that may arise.

The constitution also provides for expropriation of property, both Mexican and foreign, for reasons of public utility and by means of indemnification. Expropriation, however, is rated low on the U.S. Commerce Dept.'s list of investment hazards.

Aside from those specific areas, there are no restrictions on the entry of foreign capital, and manufacturing investments are encouraged by tax concessions and liberal convertibility laws.

Federal law requires that the majority interest in an enterprise be held by Mexican nationals, but it is conservatively enforced and only in certain industries. Transportation is the only industry affecting chemicals or petrochemicals trade that comes under the law.

A federal labor law requires that all enterprises employ at least 90% Mexican nationals, except in management positions. Exceptions are also made for technical positions for which Mexicans are not available.

Under the Mexican doctrine of saturation, the government can declare a particular industry saturated, restricting further investments in that area. Thus, construction of the Du Pont and Glidden titanium dioxide plants *(see table)* has been blocked until the government decides which company will be permitted to produce in Mexico.

U.S. investors may also see as a drawback the Mexican's preference for higher and prompter returns than are common in this country. The Mexican is likely to favor maximum dividends over reinvested profits.

Moreover, there is the competition from government investments and monopolies. Banco Nacional controls the government's direct investments; by the end of '53 the bank had invested $45.7 million in the stocks of various enterprises.

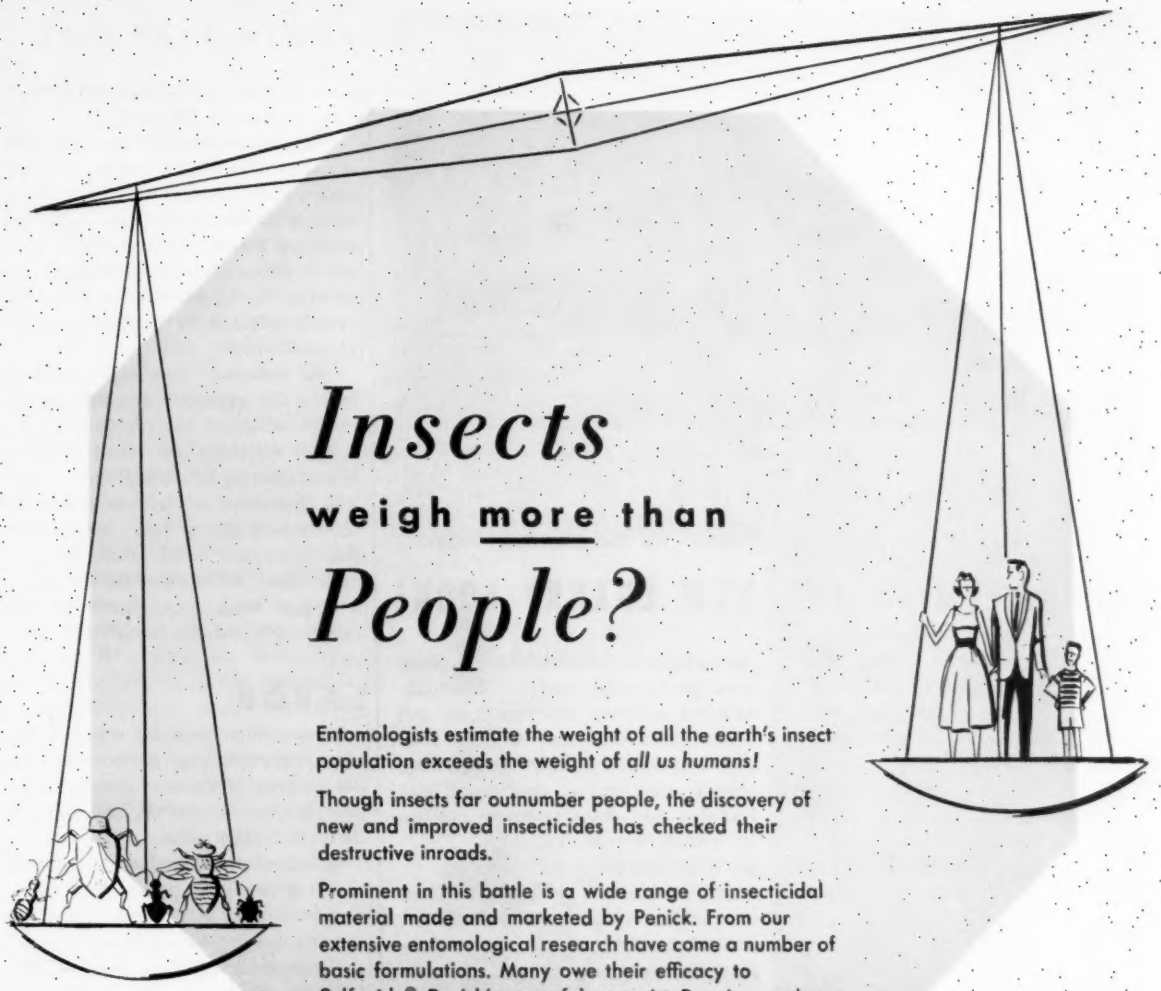
But one local factor tends to sweeten the foreign-investment pot for U.S. investors. It's the U.S. government's foreign investment guarantee program, already covering some 34 process industry projects *(CW, Nov. 9, '57, p. 35)*.

Under that program, new private investments abroad are insured—for an annual charge of one-half per cent of the value of the investment—against loss due to inconvertibility of profits or capital, expropriation or war damages.

Tiny River Aids Study

A new river leapt to life last week a few miles west of Philadelphia in the storied Revolutionary War valleys near Paoli, Pa. Unlike most rivers, it will probably never appear on a map, for it runs but 6 ft. wide, 150 ft. long. But it may provide important data about water pollution to chemical process industries.

The new river is an experimental basin wherein controlled study may be made of the biology of water life. It's the brain-child of water biologist



Insects

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People?

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ADMINISTRATION

Ruth Patrick, of Philadelphia's Academy of Natural Sciences.

She has determined the levels of aquatic life in streams into which companies seek to dump wastes. After industrial plants have been built, she finds out whether their pollution control is effective by determining if the aquatic life of streams has been adversely affected by wastes from the plants.

The miniature river will provide a habitat for aquatic life, which can be readily observed by scientists.

Also watching the results will be Manufacturing Chemists' Assn. MCA has sponsored a river recovery research program at the academy for five years and hopes that the new experiment "will further the pursuit of abundant fresh, clean water for the community and for industry."

LABOR

Long Strike: Look for a long hold-up of construction projects in the Sabine area of Texas if present wage negotiations follow the pattern set there two years ago.

A federal mediator last week failed to bring about a compromise in a dispute that has sent picket lines to 11 construction projects at chemical process locations involving Goodrich-Gulf, Jefferson Chemical, Neches Butane Works, Du Pont, Spencer Chemical, Firestone, Gulf, Texas Co., Magnolia refineries and others.

This is the area where construction stopped for a record-breaking 80 days two years ago during a dispute between the same unions and many of the same contractors. Two-year contracts terminated that shutdown. These agreements expired last March 31. Negotiation toward new contracts began in Jan. '58, have been droning on ever since.

A month ago, carpenters formed the first picket lines, were followed shortly by ironworkers. At issue, aside from basic matter of wage increases, is a dual bargaining standard resulting from a policy of separate bargaining established by the Sabine Area Construction Committee, which is a comparatively new association of contractors. A group that was organized previously, Associated General Contractors, has already signed agreements calling for increases of 32.5¢/hour for carpenters and ironworkers.

LEGAL

Proxy Count Blocked: Unexcelled Chemical Corp. (New York) and its president, James R. O'Connor, have been granted a temporary restraining order in New York supreme court that blocks tabulation of proxies cast at the company's annual meeting July 23. Unexcelled is seeking a permanent injunction to prevent tabulation.

The company charges that material sent to stockholders by Unexcelled's stockholders' protective committee contained "false, fraudulent and misleading statements that were intended to and did deceive stockholders and which omitted certain material facts." The committee said that its material was taken from company records.

The litigation resulted from a proxy fight waged against the company's management by the committee and is intended to prevent proxy agents of the committee from voting shares represented by proxies. It's also designed to restrain inspectors of election from receiving and counting those shares.

Judge Arthur Klein issued the restraining order, pending consideration of the motion for an injunction.

KEY CHANGES

F. G. Gronemeyer to vice-president, Chemstrand Corp. (Decatur, Ala.).

R. S. Earhart to manager, Chemical Division, International Corp., Goodyear Tire & Rubber Co. (Akron).

Earl E. Stone to director, Holex, Inc. (Hollister, Calif.).

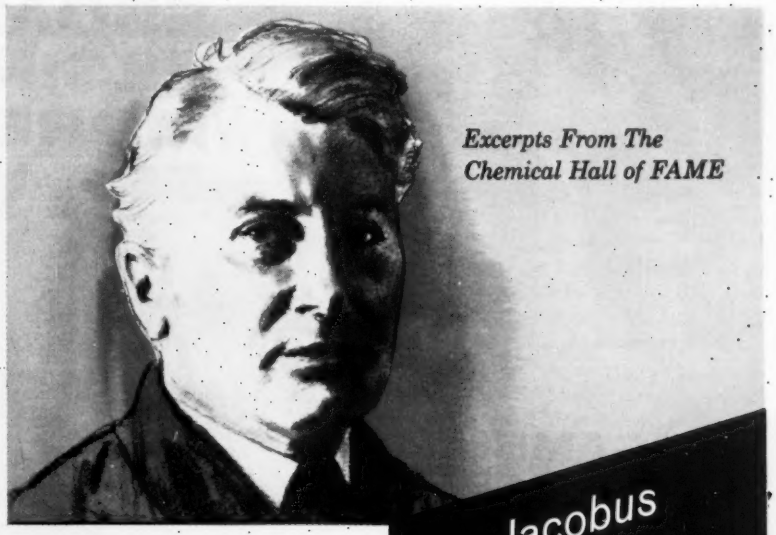
William M. Lee to assistant to the vice-president and technical director, Pennsalt Chemicals Corp. (Philadelphia).

William R. Haas to director of marketing, Overseas Division, Monsanto Chemical Co. (St. Louis).

A. J. Toering to manager, Defense Products Dept., Callery Chemical Co. (Pittsburgh).

Walter P. Arnold to executive vice-president, Koppers Co. (Pittsburgh).

William L. Machmer, Jr., to director of purchases, General Chemical Division; and **Richard S. Perkins** to director; Allied Chemical Corp. (New York).



Excerpts From The Chemical Hall of FAME

Jacobus Henaricus van't HOFF

1852-1911

Present views of stereochemistry stem from Jacobus Henaricus van't Hoff's "La Chemie dans l'Espace." For his discovery of the cause of optical activity in carbon compounds, van't Hoff received in 1901 the first Nobel prize for chemical achievement.

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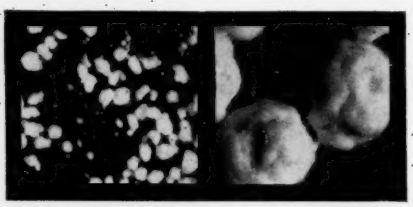

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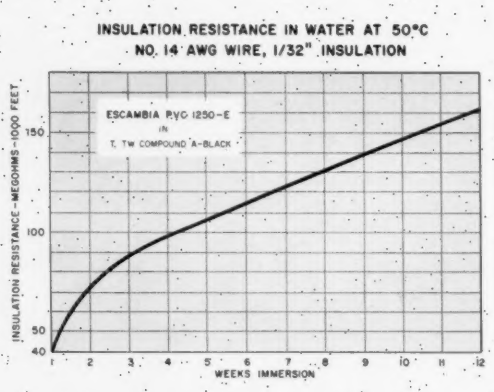

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Air-Sea Team Speeds Waste Disposal Line

Helicopter lowers dynamite to demolition crew in rubber raft.

This week, the Georgia-Pacific Paper Co. is racing to complete an underwater waste-disposal project before the rough surf and high tides of fall force a halt to activity. The work is on the floor of the Pacific Ocean off the rocky coast of Newport, Ore.

Enlisting the services of frogmen and a helicopter, the company is extending the effluent line from its new, $22-million Toledo, Ore., kraft mill an additional 1,800 ft. into the ocean to prevent waste liquor from being washed up on the beach.

Need for the extension was apparent only a few days after the plant opened in early March. Despite original precautions to extend the 8½-mile plant-to-ocean pipeline 1,100 ft. offshore, tourist organizations and cottage owners complained of brown liquor and foam along the beach. The pipeline's outfall was located at the level of mean low tide; but at tides below the mean low, mill wastes were left in pools on the beach.

In extending the pipeline into deep water, where currents will carry away effluent at all stages of tide, it has been necessary to blast a trench through several dikes of basaltic rock. To speed the operation, the helicopter lowers the frogmen-demolition experts and dynamite into rubber rafts from which each charge is placed at the direction of a co-worker on the beach sighting through a transit.

Probable method of laying the pipeline, once the trench is complete, will be to weld the line on shore and tow it into place, using well-anchored tugs.

The original pipeline cost G-P $750,000. But the joint air-sea project may add another $50,000 to the cost of making possible problem-free waste disposal.

Also faced with deep-water waste disposal problems, Stauffer, at Tacoma, Wash., found a less costly solution: anchoring one end of a long polyethylene pipe to the shore, then floating the other end out to deep water and sinking it with weights (*CW, Aug. 31, '57, p. 124*)—but it didn't have rocks and rough surf to contend with. Another chemical plant solved its disposal problem by barging wastes out to deep water.

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No Handicap to Production

A physical handicap isn't necessarily a disadvantage when it comes to job performance, even in production and maintenance. That is the finding of a company-wide study recently completed by Du Pont. It has more than 1,000 physically handicapped employees.

Supervisors, whose key role of developing good workers takes on added importance in cases of the physically handicapped, report that the job performance of 27% of those employees was above average, 60% was average and only 13% below average. And, although the tasks of these employees range from professional and technical to clerical classifications, half of them have plant jobs as operators, craftsmen and foremen —jobs that are often considered the most physically taxing.

Many Are Foremen: The largest group—258 of the physically handicapped employees — are operators. Craftsmen and foremen total 255; professional and technical, 163; service, 145; clerical, 131; supervisory and management, 43; laborers, 26.

And the safety records of these employees show that 39% were above average, 59% average and only 2% below average, while the attendance of 36% was above average, 50% average and 14% below average.

In conducting the study, Du Pont considered only those with handicaps that might prevent them from handling jobs that the average nonhandicapped could perform. It ruled out many employees with handicaps that weren't severe.

Nothing Stops Them: The largest number in the handicapped group, 258, were afflicted with cardiovascular diseases; 193 had musculoskeletal diseases (e.g., severe arthritis, scoliosis); 131 had neurological diseases (e.g., polio, paraplegia, cerebral palsy); 118 had undergone amputation. Nine totally blind and 12 deaf mute employees were also among those whose records were studied.

The handicaps of plant operators and mechanics were found to be typical of those with less physically taxing jobs, included amputations, physical deformations and even total blindness. The jobs haven't been created specially to suit the handicapped — rather, the individual's abilities have been fitted to the jobs.

Among the findings: those who were handicapped before they were employed have turned in better records than those whose handicaps developed after employment. This appears to be caused by a strong incentive of new workers to prove their worth on the job.

Began After the War: Although only 54 of the group received their disabilities in military service, returning veterans from World War II first interested the company in employing the physically handicapped. But it was not until '54 that Du Pont adopted a formal policy, in line with the President's Committee and Governor's Committee in various states, on the employment of the physically handicapped.

Du Pont is one of 51 cooperating companies on the Delaware Governor's Committee. And, like other chemical firms throughout the country that are hiring the physically handicapped *(CW, Oct. 12, '57, p. 55)*, its experience has been good.

EQUIPMENT

Mercury Lamp: General Electric Co.'s Large Lamp Dept. (Nela Park, Cleveland 12) is offering a new 400-watt mercury lamp, said to produce 28% more light over its life-span, rated at more than 9,000 hours. A new type of tri-metal cathode is the key, but the lamp also includes a new type of resistor and simplified, lighter-weight mounting.

•

High-Temperature Clothing: Du Pont's Fabrics Division (Wilmington, Del.) is out with a new lightweight fabric for protective clothing. It's chemically resistant to acids, alkalis and solvents at temperatures to 300 F. Called Fairprene coated fabric, the material is Dacron polyester fiber, coated with Viton synthetic rubber. The material weighs 9 oz./sq.yd.

•

Process Monitoring: Panellit, Inc. (Skokie, Ill.), is out with a new annunciator with flashing sequence alarm for monitoring 24 to 96 points in automated processes. Called Series

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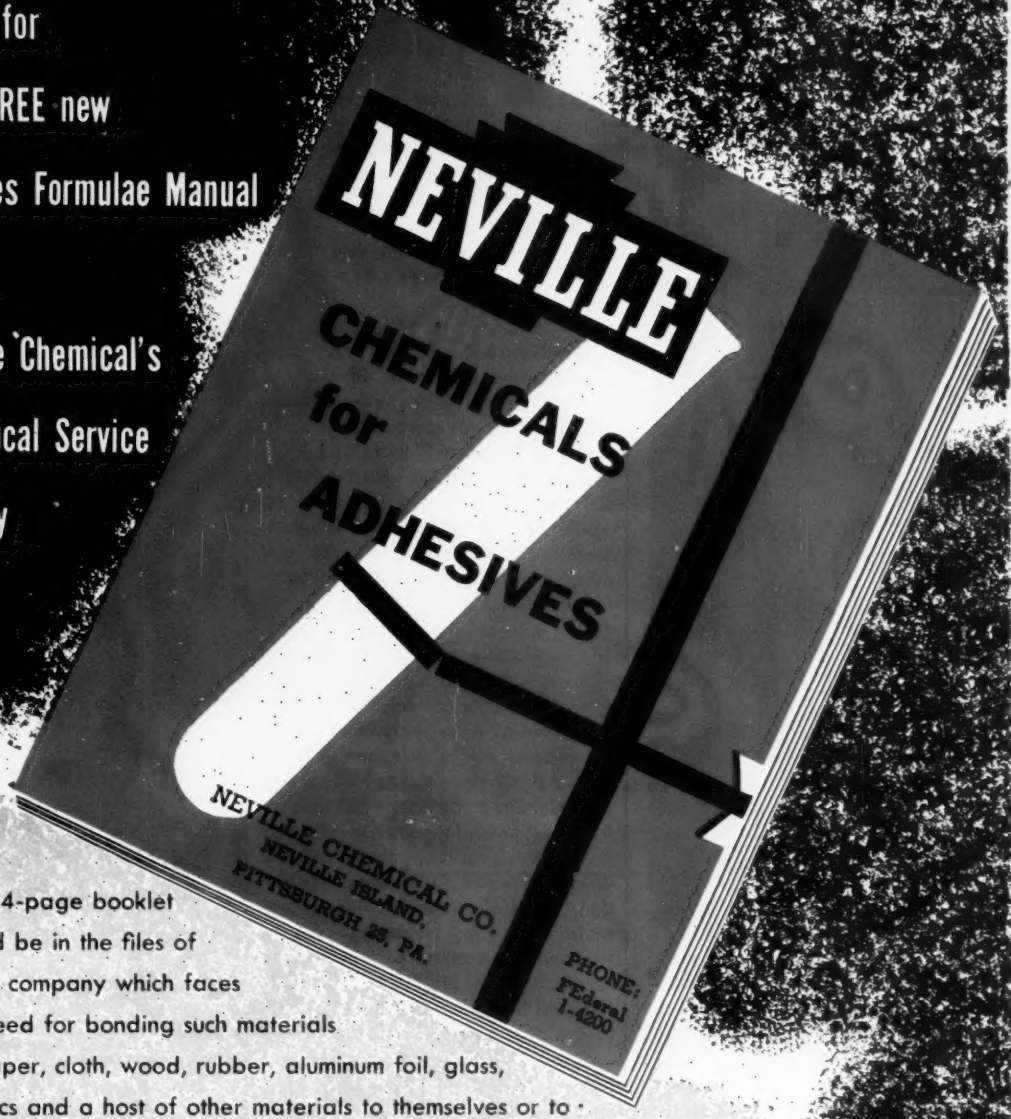

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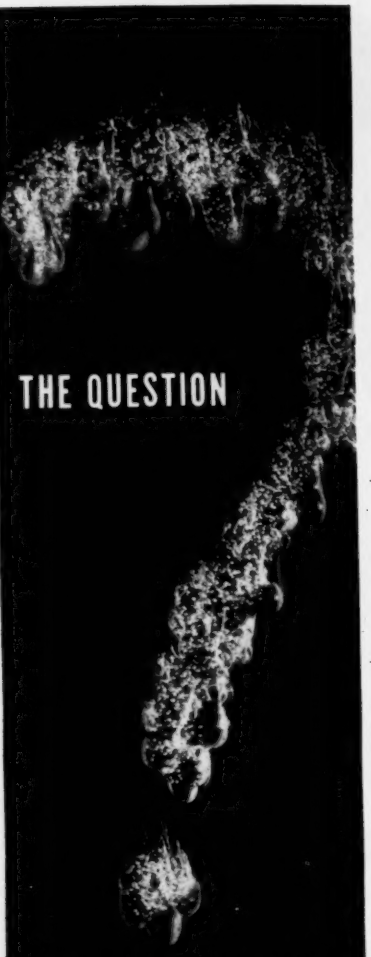

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PRODUCTION

61, it requires 75% less space than previous models; and remote-mounted auxiliary equipment has been eliminated by locating all relays inside the annunciator cabinet. Operator attention is directed to abnormal process conditions by flashing-light sequence and audible alarm. Optional selective reset for use with the recorder-scanner prevents an acknowledged alarm point from realarming. Series 61 uses no power when all signals are normal.

•

Weatherproof Motor: A new weatherproof ac. motor in sizes to 250 hp. for operation under outdoor or extreme-moisture conditions is offered by Reliance Electric and Engineering Co. (24701 Euclid Ave., Cleveland 17). The open motor exceeds NEMA splashproof requirements. All external parts are cast iron; insulation system is nonhygroscopic, Reliance says.

•

Anode Circuit Breaker: A metal-enclosed six-pole anode circuit breaker, Type FB, that permits drawout of individual poles without interrupting process power is a new offering of I-T-E Circuit Breaker Co. (19th and Hamilton Streets, Philadelphia 30). Continued dc. power supply during servicing of one phase will cut downtime costs in aluminum-reduction, other electrochemical processes where high-speed anode breakers are used for protection of mercury-arc rectifiers, says I-T-E. One breaker pole can be replaced in three minutes in the new model.

•

Equipment Rental: Tote System Inc. (Beatrice, Neb.) has introduced a trial rental program for its line of Tote and Tilt Bins. Customers may try one or more Tote systems before deciding which is most advantageous.

•

Belt-Conveyor Scale: Weighing & Control Components, Inc. (Hatboro, Pa.) is out with a new pneumatic belt-conveyor scale that W&CC claims may be installed on existing flat-belt or trough conveyors, with minimum downtime and slight conveyor modification. The unit is available in a wide range of capacities, is designed on the unit principle for use with other weighing components for recording, totalizing, proportioning and programing material flow.

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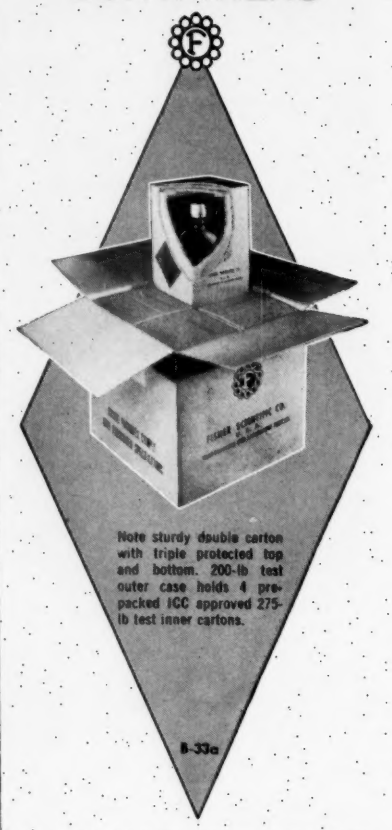
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(Plus a stabilizer, 500 ppm)

Becco research has studied many epoxidation techniques and stands ready now, as always, to help you use high-purity Peracetic Acid to meet your particular epoxidation requirements. For example, under reaction conditions developed by Becco, high yields of epoxides are obtainable from a wide variety of difficult-to-epoxidize olefinics.

Moreover, this versatile oxidant has proved superior in the production of amine oxides, sulfones, metal salts, etc. Becco Peracetic Acid is also widely used as a bleaching agent, as a germicide, and as a polymerization catalyst.

The essential points to remember are these: If you are currently using Peracetic Acid, rely on Becco as *the* source for the *high-purity* product. If you are not now using Peracetic, but would like to investigate its use in epoxidation reactions (or the use of H_2O_2, for that matter), Becco research will work with you—and there's no obligation on your part. Feel free to consult us.

In the meantime, you will find the following bulletins of interest—they're free at your request:

BULLETIN No. 4 – Peracetic Acid 40%

BULLETIN No. 69 – Epoxidation and Hydroxylation with Becco Hydrogen Peroxide and Peracetic Acid.

Progress in Peroxygens

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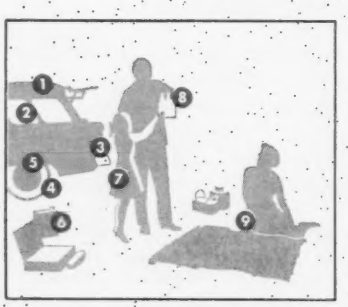
Activated Carbon on a Picnic



1-Enamel. 2-Vinyl upholstery. 3-Chromium plating. 4-Synthetic rubber. 5-White side walls. 6-Gasoline. 7-Synthetic fabrics. 8-Soft drinks. 9-Dyestuffs.

You'd be surprised how many "every-day" products in your life depend upon Pittsburgh Activated Carbon for their quality and purity.

These unique coal-derived granules, which look like tiny black sponges, are commonly used in the manufacture of every product illustrated above, and identified at the left.

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Technology Newsletter

CHEMICAL WEEK
August 16, 1958

Payoff in the research for a commercial polypropylene film was displayed this week by Ludlow Papers, Inc. (Needham Heights, Mass.). Ludlow developed a still-secret Flex-L process to make film (tradenamed Proplene) from resin supplied by Hercules. The new film will cost less than polymer-coated cellophane, will also compete with films of saran, medium- and higher-density polyethylene, and some vinyls. It reportedly performs well on stand packaging machines, has good printability and is said to have better moisture resistance than the relatively new (*CW, Feb. 1, p. 75*) high-density polyethylene films.

Ludlow will also launch these new packaging products: Caplene, a film made from Spencer's nylon-6, which is expected to compete with polyester films; and Orthofoam and Metafoam, which are foamed low- and medium-density polyethylenes, respectively.

•

Fibrinolysin has shown promise in treatment of thromboembolic diseases, e.g., coronary thrombosis. In a drug formulation called Actase, made by Ortho Research Foundation (Raritan, N.J.), the blood-clot dissolving enzyme (*CW Technology Newsletter, June 28*) has successfully worked in preliminary tests at Washington, D.C., and Plainfield, N.J.

•

A plant spray to reduce smog damage to crops is now offered by Chas. Pfizer & Co., Inc. Called Ozoban, it is an ascorbic acid formulation that is applied before and during smog attacks, acts as an antioxidant against ozone and airborne oxidized hydrocarbons.

•

Will thermal reduction replace electrolysis for aluminum production? Evidence that it's possible is beginning to accumulate. Vereinigte Aluminum-Werke Aktiengesellschaft has just received a U.S. patent (2,843,475) on a process for reducing high-grade aluminum oxide with aluminum sulfide and carbon. It's carried out at about 1200 C under vacuum. Word of the German work comes hot on the heels of the issuance of a similar U.S. patent to Alcoa (2,829,961). The Alcoa process employs carbon or aluminum carbide for the reduction, is carried out at higher temperatures—1800-2000 C.

Alcoa researchers won't say very much about their work. They admit that the process has been piloted, but that some snags remain to be solved. They point out that the electrolytic approach consumes large blocks of electricity and that there's been a continuing effort to get around this. Their patented process, they say, is one avenue of approach to the problem.

But there's no getting around the fact that a feasible thermal reduction would have several advantages: It would eliminate the need to fabricate anodes, would require no direct current (alternating current furnaces would be suitable). It might cut over-all power costs significantly, side-step the need for a solvent (e.g., cryolite), might even lower costs.

Among the problems to be solved, as Alcoa researchers freely admit, is the construction of a furnace that would stand up under steady use at the required high temperatures.

•

Glueable polyethylene is being used by Norwich Pharmacal Co. (Norwich, N. Y.) in a folding box for packaging personal hygiene products. It's the first commercial application of a process developed by Lowe Paper Co. (Ridgefield, N. J.). Feature: it permits gluing polyethylene with low-cost starch or dextrin adhesives.

This is how it's done: a polyethylene resin is extruded into a clay-coated board and "specially treated" to form a glueable surface; the polyethylene coating substitutes for a glassine-paper laminate.

Du Pont, which is supplying resin (Alathon) for the job, feels that the Lowe process may significantly increase the use of packaging materials coated with polyethylene. It sees possible applications in boxes for chlorinated powdered detergents, cereals, cake mixes and other items for which a loose inner liner is now employed. It also sees possibilities in frozen foods whereby elimination of overwrap might mean sizeable savings to packagers.

•

Knapsack-Griesheim AG. (Germany) has a new acrylonitrile process. The Hoechst subsidiary has worked up a method starting with acetaldehyde and hydrogen cyanide. They're treated with caustic soda to form lactonitrile at a pH of 7 to 7.5. That's stabilized with 0.5% phosphoric acid, injected—with 80% phosphoric acid and hot (1500 C) combustion gases—into a reaction furnace. In the absence of oxygen and at temperatures between 600 and 700 C, the lactonitrile is converted into acrylonitrile in yields ranging from 65 to 70%. Water, also formed, is taken up by the phosphoric acid, which is dried and recycled. Recycling unreached acetaldehyde and hydrogen cyanide boosts over-all yields to 90%.

The German firm is convinced that its new process has several advantages. It figures, for instance, that costs are some 25% lower, yields are higher, the product has good purity, and the plant is freed from the need of a nearby acetylene unit.

•

Stainless steel process equipment may be a more attractive buy for the chemical industry in the near future. U. S. Steel has brightened an otherwise foreboding steel price picture (*CW Technology Newsletter, Aug. 9, p. 73*) by cutting the price of stainless steel plate about 6%. Reason: "competitive market conditions." But discounts and direct-shipping allowances to jobbers have been eliminated, so that purchases from warehouses may not much benefit from the price cut.

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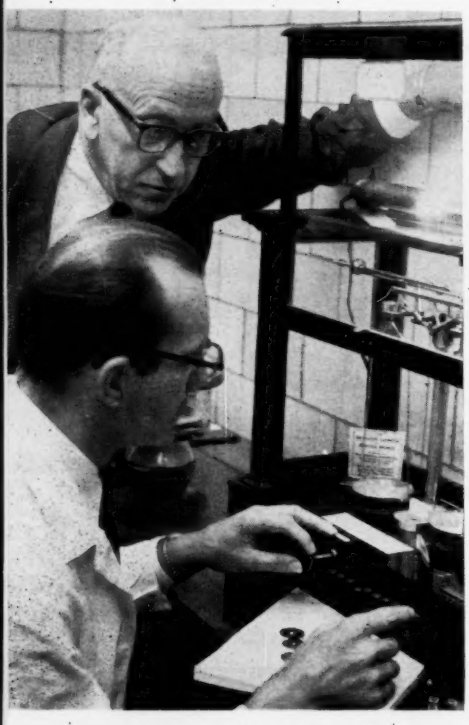
Product-Testing at Sears:

Jesse Petty, chemist, puts brake fluid through ASTM tests . . .



under supervision of Howell Gregory, chemical division manager.

The new Sears, Roebuck catalog, now being mailed, is a showcase for a host of chemical specialties—everything from brake fluids to hair dyes. Virtually all rated a spot in the catalog after a thorough checkout in Sears' testing lab (see cuts), first stop on the route of any specialties makers trying to sell the giant mail-order house.

Established in 1911 to back up the reputation of Sears' brand-name (90% of catalog items carry Sears' label), the lab has become one of the largest testing labs in the U.S. Its major role is backstopping Sears' buyers—providing these marketing specialists with a full technical evaluation of every new item they seek to add to the Sears product list.

Independent Captive: "In essence," explains A. H. Goodemote, assistant lab supervisor, "we operate as an independent consulting firm, with Sears' merchandise buyers as our clients. Our projects are undertaken to meet their needs, to answer their questions."

The lab doesn't make any recommendations or decisions. It's up to the buyer—the man for a potential specialties supplier to see—to make what use he wants of the data the lab supplies. He can disregard it entirely if he chooses. In practice, however, the lab findings carry great weight, "point the direction in which the buyer will decide."

With so much emphasis placed on its own brand-names, Sears is now especially watchful over product performance. By putting its own name on a product, the company—not its supplier—assumes responsibility for product quality. Sears' sales theme has long been that if anything goes wrong, a dissatisfied customer is to place the blame on Sears.

The Sears merchandise testing and development laboratory, on Chicago's south side, occupies four floors (over 80,000 sq. ft.) and has over $1.5 million worth of testing equipment. It's staffed with over 150 chemists, engineers, technicians. A big staff's a necessity; the lab tests some 20,000 separate items each year.

A specialties maker who has his product put through Sears' testing program often gets more than a critical evaluation of his product; he may get helpful suggestions on product design, formulation, packaging and production economies. These may come from any of Sears' four main areas of investigation: product engineering, quality control, production engineering and industrial design.

- Product Engineering: The formulation or engineering design of a product is considered here. Engineers tear down a product, examine and analyze each component, put them back together in what is determined to be the best functional and competitive fashion from an engineering standpoint.
- Quality Control: Engineers check the products coming off manufacturer's production line, put them through severe use-tests. Also, they look at manufacturer's quality-control methods and testing setup. Precision of the maker's equipment and the competence of his operators are studied too. This examination indicates whether a manufacturer has the ability and equipment to turn out a consistently satisfactory product.
- Industrial Design: This refers to the appearance of a product. Sears takes full responsibility for the looks of its merchandise, provides the manufacturers with the necessary tooling, dies, etc., to turn out designs created by Sears artists.
- Production Engineering: This concerns the economics of manufacturing operation. Engineers study the manufacturing procedure, synthesize the product. They determine operating costs, capital investment, maintenance requirements. By working out what they believe to be the most efficient and economical process, they come up with a "par" (ideal) cost for a product.

Production engineering is an especially important operation with Sears. The reason is clear in light of the over-all marketing philosophy of the big retailer. The company has a big stake in its reputation as a marketer of consumer goods that are equal in quality to competing items, but priced lower. Only by digging into the actual production costs of the product is Sears able to realize

Backstopping the Buyers

economies there, and avoid relying solely on volume-buying at reduced rates.

The above investigations are carried out in seven major testing divisions of the lab: chemical, electromechanical, heat and refrigeration, home economics, materials, radiophysics and textiles.

Each division is fully equipped with standard laboratory test instruments, along with some ingenious, home-spun testing devices. One "associate" of the lab is a nearby orphanage. Youngsters there give materials what are probably their roughest tests. Synthetic heel and sole materials, for instance, might be tested for wear characteristics on shoes worn by a particularly peppy tot.

Lab Grad: A brief look at the history of one product—new All State Hevi-Duty brake fluid—will give a chemical specialty maker an idea of how the Sears lab goes about helping create a Sears brand-named product.

Late last spring, one of Sears' automotive accessory buyers, probably influenced by all the publicity being put out calling for upgraded brake fluids, decided that Sears could advantageously extend its brake fluid line with a high-boiling-point product. Braking the faster, heavier new autos puts a severe demand on a hydraulic brake fluid. Sears' top brake fluid at that time had a boiling point around 375 F and one of the auto equipment buyers thought there might be a market for a material with a boiling point around 415-430 F. He posed the problem to the lab.

Chemist Jesse Petty of the chemical testing division, following preliminary investigation, thought a high-boiling-point polyglycol that had just become available might do the trick. Next he checked to see if the other materials that go into a brake fluid—anti-oxidants, corrosion inhibitors, lubricants, etc.—would also stand up to high temperatures. As a result, Petty then produced a brake fluid formulation that looked suitable—at least in the lab.

The buyer then came back into the picture. With Petty, he approached one of the manufacturers of Sears' other brake fluids. The manufacturer was able to lower the cost of Petty's formulation, and devised an economical manufacturing process for the new product.

Back to the Lab: First material off the production line went back to Petty's lab, where he put it through the ASTM tests for heavy-duty brake fluid. It passed with no trouble—and the buyer had his product. A suggestion by Petty at this point led to another product improvement. He thought that adding a red dye to the fluid (to indicate leaks in the braking system) might make a forceful selling point. After testing a dozen different dyes he found one that would stand up at high temperatures and it was made part of the regular formulation. Next step for the product was its inclusion in the Sears catalog as All State Super-Safe Hevi-Duty brake fluid.

Another instance of the Sears lab working closely with a supplier was the development of a new emulsion hair dye, Glow, made by Chicago's Gorolin Corp.

Naturally Sears doesn't extend this sort of help to every manufacturer. Like other retailers, it expects most product improvements to come from the manufacturer. If the supplier doesn't keep coming up with the new improvements there are plenty of competitors who will.

It's no easy job getting a product accepted for testing by one of the more than 450 buyers Sears employs in its $4-billion operation. And even if a product gets as far as the lab there's still no assurance that the product will eventually grace the pages of the catalog. A product could conceivably be the best product for its particular use and still not qualify, because it couldn't fit into the Sears over-all pricing setup.

Less than 5% of the products that Sears sees are worth the time and effort to lab-test, according to the company. The mortality rate is discouraging but as one small disinfectant manufacturer told *CW*, "With a Sears brand-name on your product and that fabulous Sears marketing machine working for you, you can really step into the 'big time.'"

CW PHOTOS—MERRILL PALMER

A new hair dye gets in-use test by Katherine Graham . . .

and findings are later checked out with Gregory.

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Sunoco benzene surpasses ASTM purity specifications for nitration-grade benzene. Its minimum freezing-point specification (5.2C), in fact, is nearly a half degree higher than ASTM nitration-grade specifications. This higher purity means higher yield and better quality control.

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For further information and a list of Sun offices, consult Chemical Materials Catalog.

SPECIALTIES

PRODUCTS

Old Smoothie: Continental Wax Corp. (Mount Vernon, N.Y.), resisting the trade's shift from natural waxes to synthetics for floor polish formulations, has just introduced a high-carnauba polish into New York markets, prior to distributing it nationally. The product is a home-packaged version of a product that Continental formerly sold only to industrial users, is called Six Month Floor Wax. It sells for $1.49/pt.

•

Suds for Surgeons: Colgate-Palmolive has a new product for surgeons, Artic, a hexachlorophene-containing liquid surgical soap. The product contains 35% solids and 31% anhydrous soap, with pH adjusted to 10.2 maximum. It's diluted with two parts water, is sold in 5-, 30- and 55-gal. drums.

•

Mylar for Milady: A line of chrome, gold and copper Mylar-and-vinyl tapes has been introduced by Marglo, Inc. (New Britain, Conn.). The tapes come in 79¢ rolls, with 10 ft. of 3/4-in. tape.

•

Foam-Fighting Latex: Dylex Latex K-31, a new paint latex with strong foaming resistance, has been introduced by Koppers Co., Inc. (Pittsburgh). The new formulation is a stable water dispersion of a styrene-butadiene copolymer modified during polymerization. The latex may be used alone or in combination with other film-formers, including long-oil alkyds, proteinaceous or cellulosic water-soluble resins, or in combination with conventional, styrene-butadiene latexes.

•

One's Enough: Imperial Chemical Industries (London) is offering a new one-coat enamel finish for household appliances. The new product is tradenamed Dulux Acrylic Stoving Enamel F664. It can be used on pretreated steel, zinc-coated steel and aluminum.

•

Quicker Tablet Coating: Drug makers may soon be using a new tablet coating process worked out at the State University of Iowa. University researchers suggest as coating the use of a combination of 5% polyvinylpyrrolidone, 5% acetylated monoglyceride and 2% polyethylene glycol-

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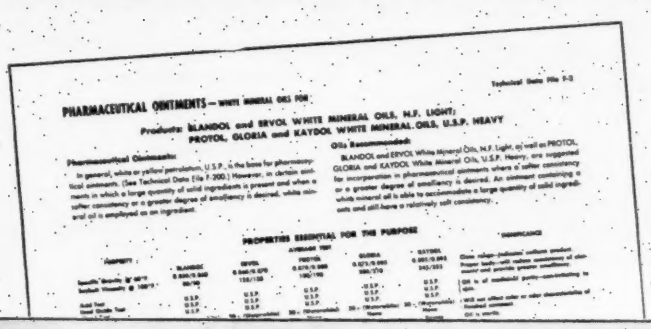

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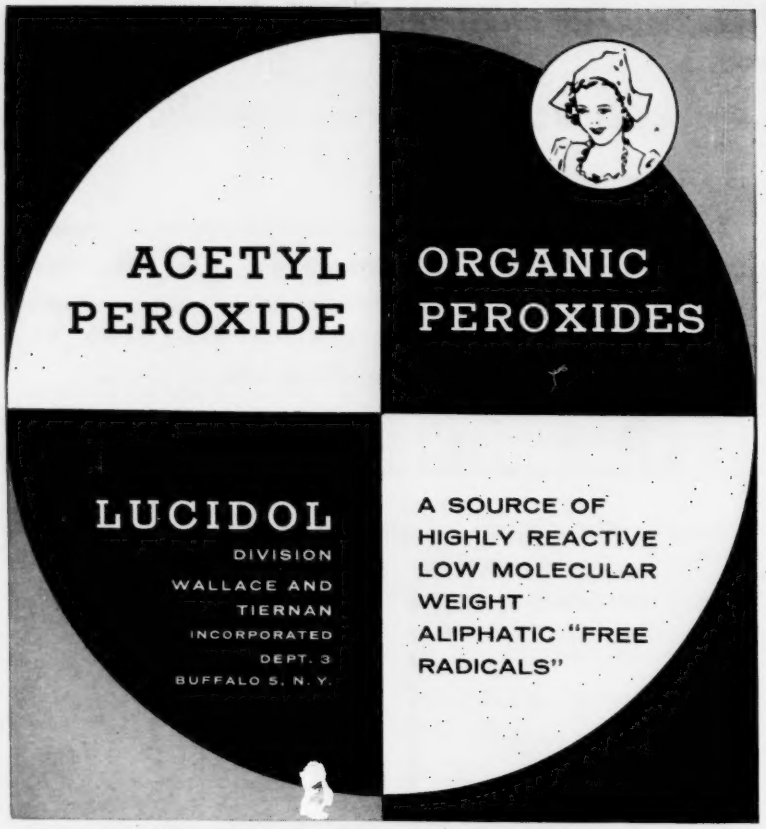

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SPECIALTIES

600 in 70% ethanol. The coating can be applied speedily, is sugar-free. It also provides high moisture resistance: tablets coated this way remained unchanged after five months' storage in a humidity cabinet adjusted to 37 C and a relative humidity of 90%.

•

Active Flocculant: Dow Chemical has added a new, high-activity, polyacrylamide-type flocculating agent, Separan, NP20, to its family of flocculants. The synthetic, organic water-soluble, high-molecular-weight polymer is claimed by Dow to be the most active material available on a unit weight basis.

•

Cutting Oil Life-Stretcher: Eli Lilly & Co. (Indianapolis) has just developed a bacterial inhibitor it says will double or quadruple the life of "soluble oil" emulsions. Called Elcide 75 (thimerosal and sodium-*o*-phenylphenate), it's supplied as a brown aqueous solution in 1-, 5- and 55-gal. containers. Besides extending product life, the additive is a safety measure —Lilly says it can reduce the bacterial counts in soluble oil emulsions that reportedly approach 1 billion/ml. The inhibitor is claimed to be effective in all standard-duty soluble oil emulsions as well as in synthetic coolants. Dosage: 1 oz. inhibitor/4 gal. of fresh emulsion.

•

Epoxy Polymer: The Chemical Division of General Mills is now offering Versamid 140, an epoxy-reactive polymer, in commercial quantities. The new product is claimed to improve the performance and versatility of amide-epoxy resins. Key properties of this new polyamide resin include long pot life, and a high heat distortion point.

•

Metal Coating Powders: Vinyl metal coating powders are now available from Polymer Processes, Inc. (Reading, Pa.). Tradenamed Corvel vinyl fusion-bond finishes, the new resins are specially produced for the Whirlclad process, a finishing method available under license from Polymer Processes.

According to the firm, metal parts to be Whirlclad are preheated to a temperature above the flow point of the vinyl resins and dipped into a bed of vinyl powders. The vinyl powder is fused onto the metal surface.

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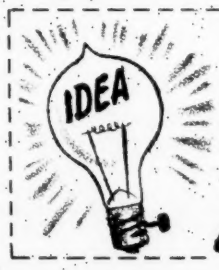

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Market Newsletter

CHEMICAL WEEK
August 16, 1958

Harvey Aluminum now joins the competition-rife aluminum industry. Harvey, a long-time fabricator of aluminum mill products, has a new 50,000-tons/year reduction plant onstream at The Dalles, Ore.

The firm enters the primary aluminum production arena at a time when the industry has some rough price problems, partly caused by foreign (Russian) competition (*CW Market Newsletter, Aug. 9*). But that hasn't discouraged Harvey, nor other new producers now going into production. This includes Ormet's new 180,000-tons/year plant at Clarington, O., which is now in partial operation and will hit full production before '59 (*CW, July 12, p. 86*).

•

Also now in production is a new liquid feed supplement plant, also on the West Coast. At Anaheim, Calif., U.S. Industrial Chemical is turning out premix concentrates (tradenamed Morea) for Pacific Coast mixer-distributors to blend with molasses to make a livestock feed.

•

And production of glacial acrylic acid is under way at B. F. Goodrich Chemical's new plant at Calvert City, Ky. The new unit, with a capacity of "several million pounds/year," brings the chemical into quantity production for the first time in the U.S. It's used to impart increased adhesion and curability to many resinous and plastics materials.

•

Prices of dodecenyl succinic anhydride have been reduced by 14¢/lb. by Allied Chemical's National Aniline Division. New tabs: 75¢/lb. in truckloads, 76¢/lb. in smaller quantities (delivery east of Denver).

The reductions result from "increased sales and higher production, which have reduced manufacturing costs," says Allied. Some typical uses for the anhydride: as a curing agent for epoxy resins, an intermediate for corrosion inhibitors, as a fungicides ingredient.

•

The city of Dayton, O., a producer of lime since last fall, has found its first customer. Heretofore the municipal lime kiln has turned out about 50 tons/day for the city's own needs; now the first outside sale—180 tons at $10.50/ton—has been made to the water department of Springfield, O. The purchased lime will be used to check out Springfield's new water softening plant.

If a market for lime develops, Dayton's municipal plant will reportedly be ready to step up production to full capacity of 150 tons/day.

Total U.S. lime production in '57 declined to 10.25 million tons, 3% below the record 10.5-million-tons output in '56. A just-released U.S. Bureau of Mines report puts the loss entirely in open-market lime, production of which dropped 5% from 9 million tons in '56 to 8.5 million in '57. Captive lime production, however, increased 12% in the same period.

Small to moderate declines in all uses of lime were noted, e.g., agricultural lime, down 17%; building, 8%; chemical and industrial, less than 1%; refractory lime or dead-burned dolomite, down 7%.

•

Polyethylene film consumption for packaging will hit 300 million lbs./year by '60, an increase of 50% over '57 demand, according to Vincent McCarthy, of U. S. Industrial Chemicals.

McCarthy's forecast, made this week at the Western Packaging and Material-Handling Exposition in San Francisco, in effect moves the 300-million-lbs./year goal two years closer than has been previously indicated by other polyethylene marketers. Monsanto's Plastics Division, for example, recently estimated the U. S. polyethylene packaging market at slightly less than 250 million lbs./year by '60, predicted 300 million by '62 (*CW, June 21, p. 93*).

And cast polyethylene film will give cellophane a run for its money, implied McCarthy, who noted that cast poly is "considerably less expensive than cellophane, yet offers comparable clarity and gloss and far greater all-round protection." Cast film (USI's material is tradenamed Petrothene) is "fast capturing the imagination of packagers in many fields," said McCarthy, and "is promising for overwrap and bagging applications."

•

Full-capacity production of propylene oxide is now under way at Wyandotte Chemical's new unit at Wyandotte, Mich. Much of the oxide output will be used captively, but there's enough left over to permit volume sales to other chemical manufacturers.

•

Price of dry ice has been increased to $85/ton, effective Aug. 16, by Olin Mathieson's chemical division; the boost—approximately $5/ton—is attributed to "increased costs of production and distribution."

•

Limited production of low-carbon ferrochrome is being resumed by Pacific Northwest Alloys, at Mead, Wash. The plant has been operating at less than capacity for a year, was completely shut down last month except for a 25-man crew. About 175 employees will be recalled this month; 450 would be needed for capacity production.

SELECTED PRICE CHANGES—WEEK ENDING AUGUST 11, 1958

	Change	New Price
UP		
Lithium hydroxide, monohydrate, dms., c.l., t.l.	0.17	0.72
DOWN		
Stannous chloride, anhydrous, dms., wks.	0.006	0.965

All prices per pound unless quantity is stated.

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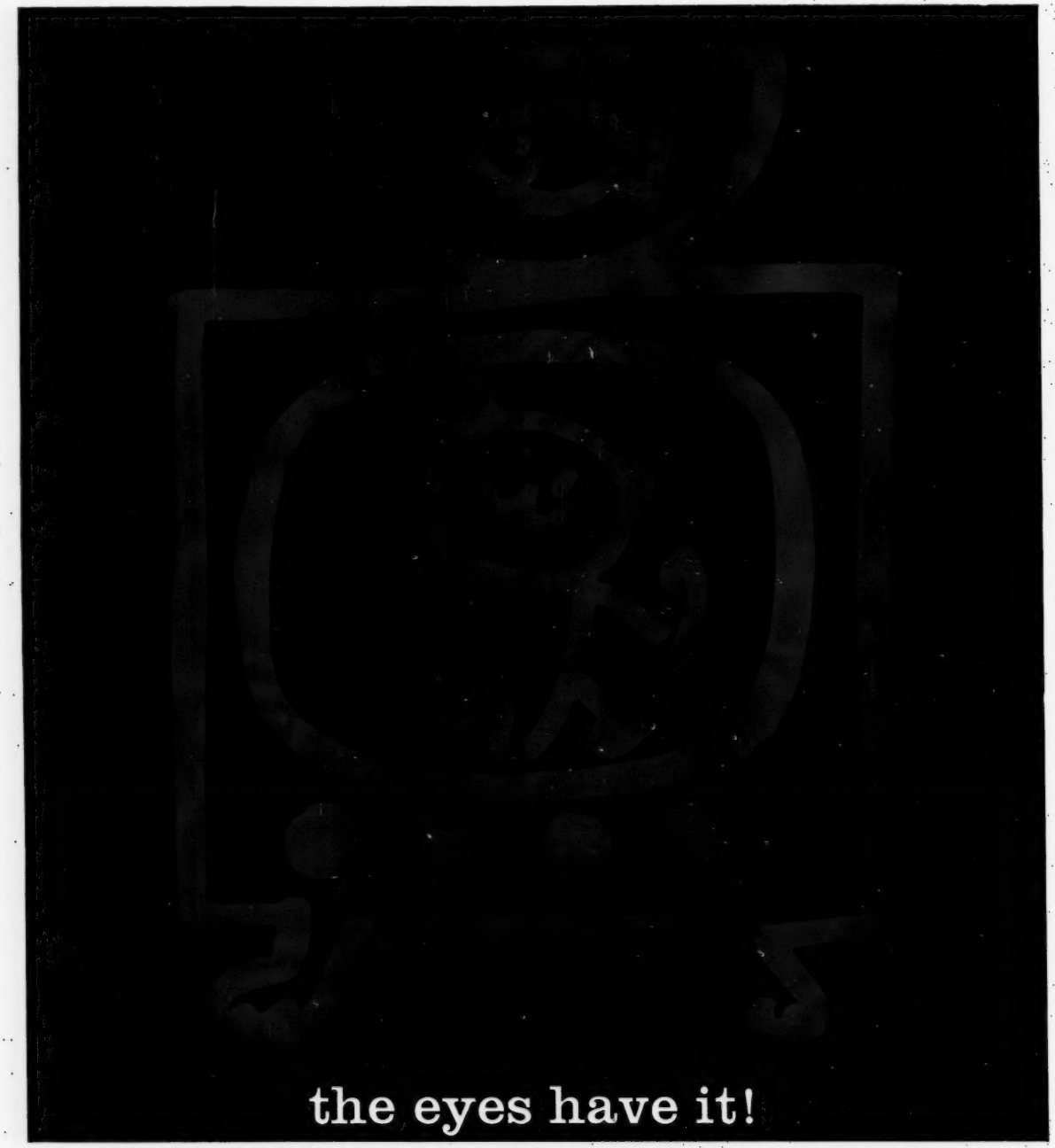

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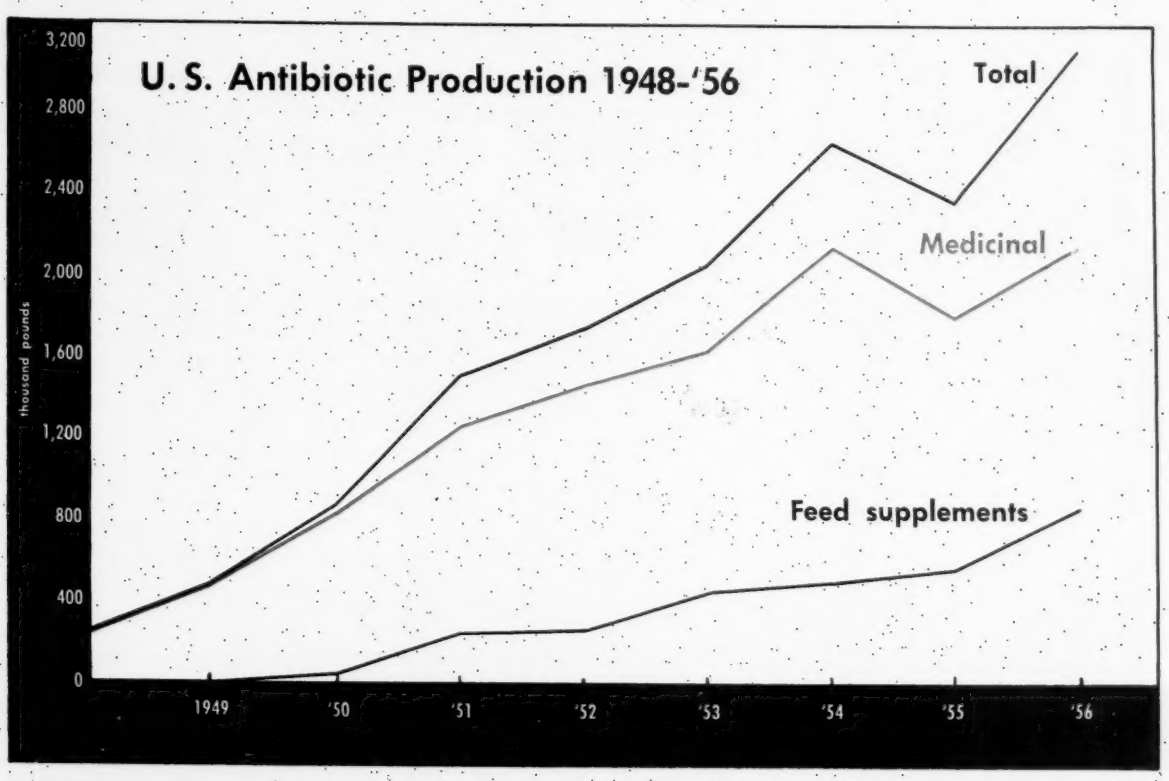
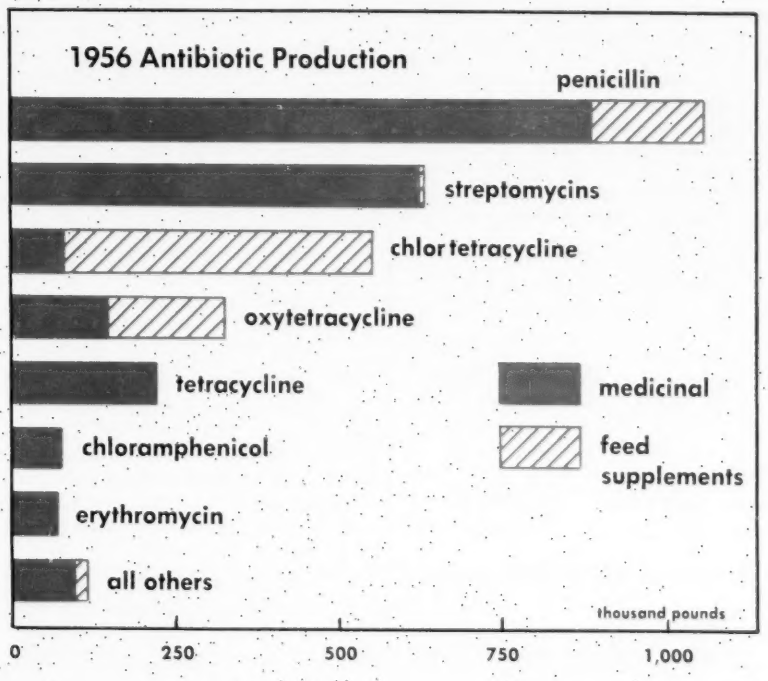


FTC's 'Incriminating' Antibiotics Data

Still shaken by the Federal Trade Commission's suit against five of its biggest members, the drug industry is only now getting its first chance to examine FTC's critical report. This week, CW offers highlights of the 361-page market study, which took two years to assemble, at an estimated cost of 1 million.

The industry, says FTC, currently does a $400-million/year business. In 17 years, it has created a product roster of impressive proportions. It has reached this size fast. The antibiotics industry didn't exist in 1941, but sales by '51 had reached $344 million. And its output (not sales) doubled in the next five years.

Between '48 and '56, total U.S. antibiotics output increased almost 13-fold, from 240,000 lbs. to well over 3 million lbs., says FTC. Penicillin accounted for 65% of the total in '48, 34% in '56. Streptomycin accounted for 34% and 5%, dihydrostreptomycin 1% and 16%, respectively.



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WHO SELLS WHAT*

Generic name	Trademark	Seller
Broad-spectrum antibiotics:		
Chloramphenicol	Chloromycetin	Parke, Davis
Chlortetracycline	Aureomycin	Lederle
Oxytetracycline	Terramycin	Pfizer
Tetracycline	Achromycin	Lederle
"	Polycycline	Bristol
"	Tetracyn	Pfizer
"	Steclin	Squibb
"	Panmycin	Upjohn
Penicillin salts:		
Benzathine penicillin	Neolin	Lilly
"	Permapen	Pfizer
"	Bicillin	Wyeth
Phenoxymethyl penicillin (Penicillin V)	V-Cillin	Lilly
"	Pen Vee	Wyeth
Hydrabamine penicillin	Compocillin	Abbott
Other antibiotics:		
Erythromycin	Erythrocin	Abbott
"	Ilotycin	Lilly
Novobiocin	Albamycin	Upjohn
"	Cathomycin	Merck

*A partial list; 11 kinds of penicillin and 18 other antibiotic substances were made in '56.

The first broad-spectrum antibiotic† was introduced late in '48. By '56, four drugs in that category jointly accounted for 39% of the nation's total antibiotics production.

Other antiobiotics, produced in '56, were: erythromycin, 2% of the total; bacitracin, nystatin and novobiocin, 2% combined; minor products, 2%, the commission's researchers said.

Sales Different: Because of price differences, dollar sales of antibiotics do not parallel volume output, FTC points out. Counting only sales from manufacturers' own production—representing approximately 90% of total sales in '56—dollar totals came to $165 million for broad-spectrum antibiotics, $67 million for penicillin, $24 million for streptomycin and dihydrostreptomycin, $18 million for erythromycin, and $27 million for all others.

Big Year: Peak year, on a dollar basis, was '51 ($344 million). Although production of antibiotics doubled in the next five years, total dollar sales declined—largely because of falling prices for older antibiotics and development of new, nonmedicinal uses at lower prices for both older and newer antibiotics.

†The broad-spectrum antibiotics are: tetracycline, oxytetracycline (Terramycin), chlortetracycline (Aureomycin) and chloramphenicol (Parke, Davis's Chloromycetin).

By '56, nonmedicinal uses of antibiotics—animal feed supplements—accounted for 27-28% of the total market. Medicinal-grade antiobiotics accounted for 72%. The rest went into miscellaneous uses.

Nonmedicinal grades are generally sold in bulk containers at prices lower than medicines. For example, says FTC, the average sales value at manufacturing level for chlortetracycline—which accounted for almost half the animal feed sales in '56—was $43/lb. when sold for this use. The cost was $256—six times as much—for medicinal grades.

FTC's Who's Who: No company now in the industry originally started as a manufacturer of antibiotics. All are established pharmaceutical makers; some are also important manufacturers of nonpharmaceutical products. A number of wartime producers have dropped out.

According to FTC, about 50% of all antibiotics produced in '56 was made by two companies: Pfizer (which had 26% of production) and American Cyanamid (23%). Net '56 sales of antibiotics (from domestic production only) totaled more than $337.7 million, were shared this way (percentagewise) by individual producers: American Cyanamid, 26.6%; Pfizer,

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Hydraulic Handling—Quick, Economical Way to Move Salt into Storage

Here's a new, effective method for moving salt from delivery cars or trucks into plant storage, without disrupting other operations. Hydraulic Handling systems, already in operation in several plants, have eliminated the expense of mechanical unloading equipment, and cut down considerably on man-hours needed to do the job.

What is Hydraulic Handling? Very simply, Hydraulic Handling is the movement of granular salt in circulating saturated brine, through pipes. Referring to the diagram, you will note that dry salt from the hopper car is mixed with saturated brine in a salt-receiving pit, to form a slurry of the saturated brine and undissolved salt. This slurry is pumped through a pipe to a salt-storage tank. Overflow brine from the tank continuously returns to the slurrying pit to carry more salt into storage.

Advantages of Hydraulic Handling. Every Hydraulic Handling installation has a number of exclusive advantages:

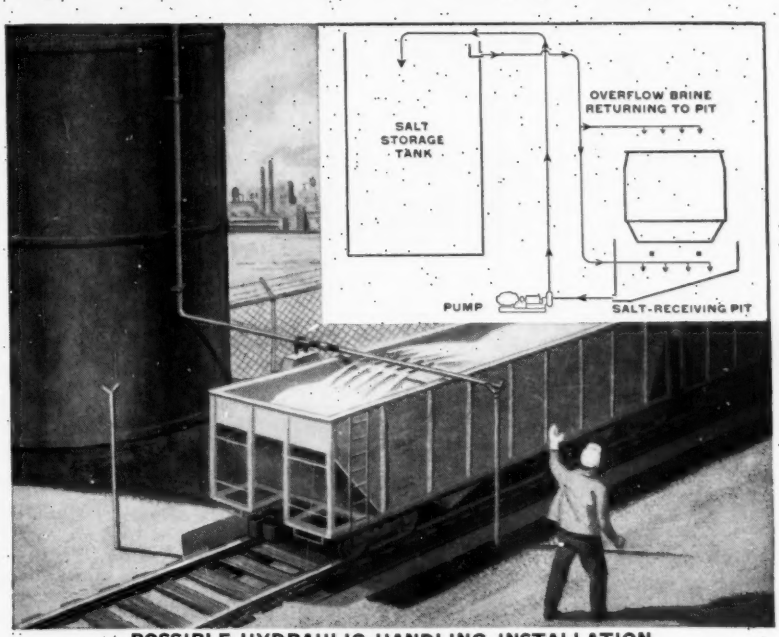
1. Great flexibility. Because *pipes* do the work of carrying salt, a Hydraulic Handling system can be installed anywhere in the plant. Piping is flexible, and can be run where it won't interfere with other plant operating activities.

2. No need to move existing equipment. Machines that might obstruct mechanical handling equipment simply don't get in the way of a Hydraulic Handling installation.

3. Long life, low maintenance. You need no safety guards . . . no roofing to protect salt from weather . . . no belt conveyors, elevators or similar pieces of mechanical handling equipment. Also, there is never any salt dust that might corrode vital plant equipment. As a result, Hydraulic Handling installations have a long life, with very little maintenance expense.

4. Unlimited capacity. Hydraulic Handling systems can be designed to unload, move and store any amount and type of salt—rock or evaporated. Whatever your specific unloading needs, Hydraulic Handling can satisfy them.

You can get more information on how Hydraulic Handling can work in your plant to cut down salt-unloading and salt-handling expense from International Salt Company. One of our experienced Sales Engineers will be glad to work with you to determine the best system of Hydraulic Handling for your specific needs. He can also help you use salt efficiently in *all* your plant operations needing salt or brine.



POSSIBLE HYDRAULIC HANDLING INSTALLATION

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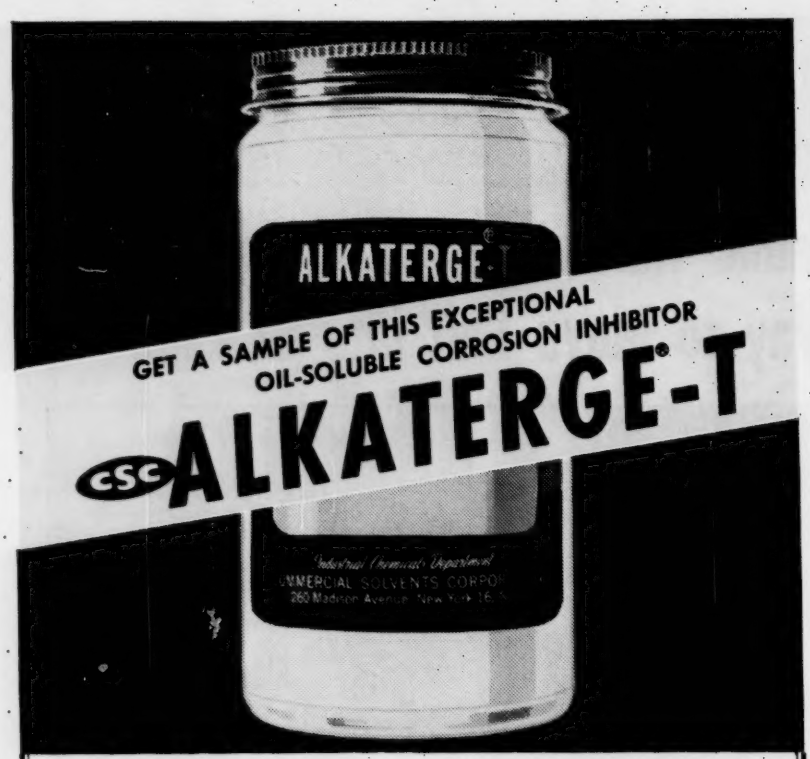

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20.8; Lilly, 9.5; Olin Mathieson, 9.2; Parke, Davis, 7.3; Upjohn, 6.7; American Home, 6.5; Merck, 4.9; Bristol-Myers, 4.5; Abbott, 2.7; Commercial Solvents, 1.0; Penick, 0.3%*.

FTC also reports that four companies accounted for nearly 80% of penicillin output in '55, and 82% in '56. In '55, Pfizer produced nearly 30% of the total; Merck, almost 20%; Olin Mathieson (Squibb), 17%; Lilly, about 13%.

In '56, Olin Mathieson produced 24.5% of all penicillin; Merck, 20%; Lilly, 19%; Pfizer, 18.6%. Together, they represent 82% of total U.S. penicillin production, says FTC.

Price Analysis: FTC's economic report describes in detail pricing practices in the antibiotics industry.

The prices named on contracts, the report says, are much lower than prices paid by other bulk customers. On one penicillin contract, FTC cited the price as 44% below the regularly quoted 400-vial price and 29% below the 100,000-vial price.

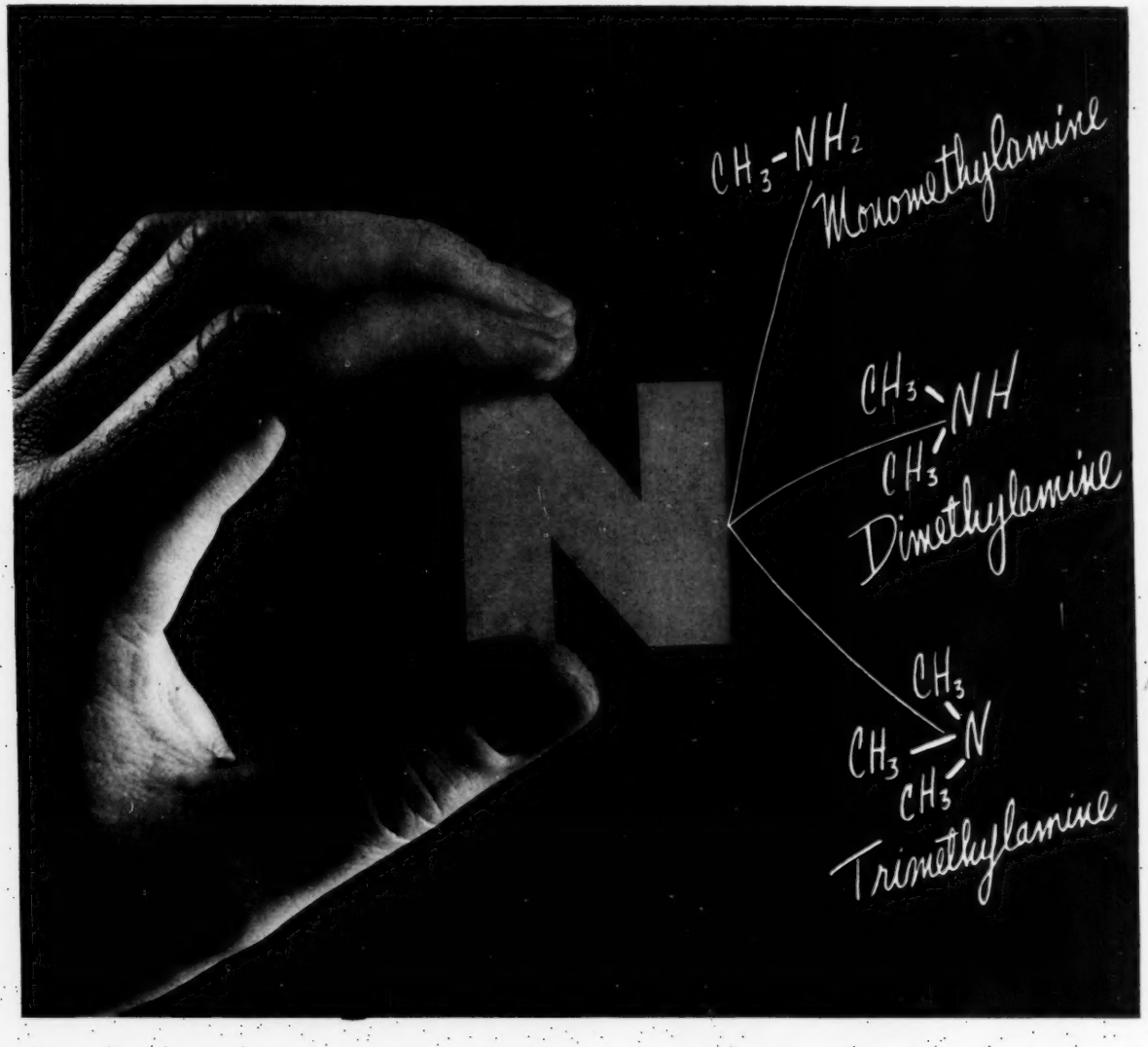
Dosage forms are sold to wholesalers, retailers, hospitals and government agencies. And, FTC says, the wholesalers' margins vary between 15-21% of the price charged the retailers. The margins between the published prices to the retailers or hospitals and the list price suggested by the manufacturers for resale to consumers is ordinarily 40% of the consumer price. When a minimum resale price is named by the manufacturer, it's almost always 10% below the listed retail price.

According to FTC, these published prices are modified in practice by a 2% cash discount and by quantity discounts offered by various manufacturers. In addition, shipment of "free goods"—i.e., of additional product up to as much as 50% of the original order—has at times been a competitive tactic in penicillin and streptomycin marketing.

Manufacturers also normally allow their customers full credit for return of "expired" dosage forms. Some manufacturers guarantee customers' floor stocks against price decline for a stated period after purchase.

Information like this makes the voluminous FTC economic report must-reading for antibiotics market researchers.

*Firms involved in FTC's antitrust suit are: Pfizer, American Cyanamid, Bristol-Myers, Olin Mathieson, Upjohn.



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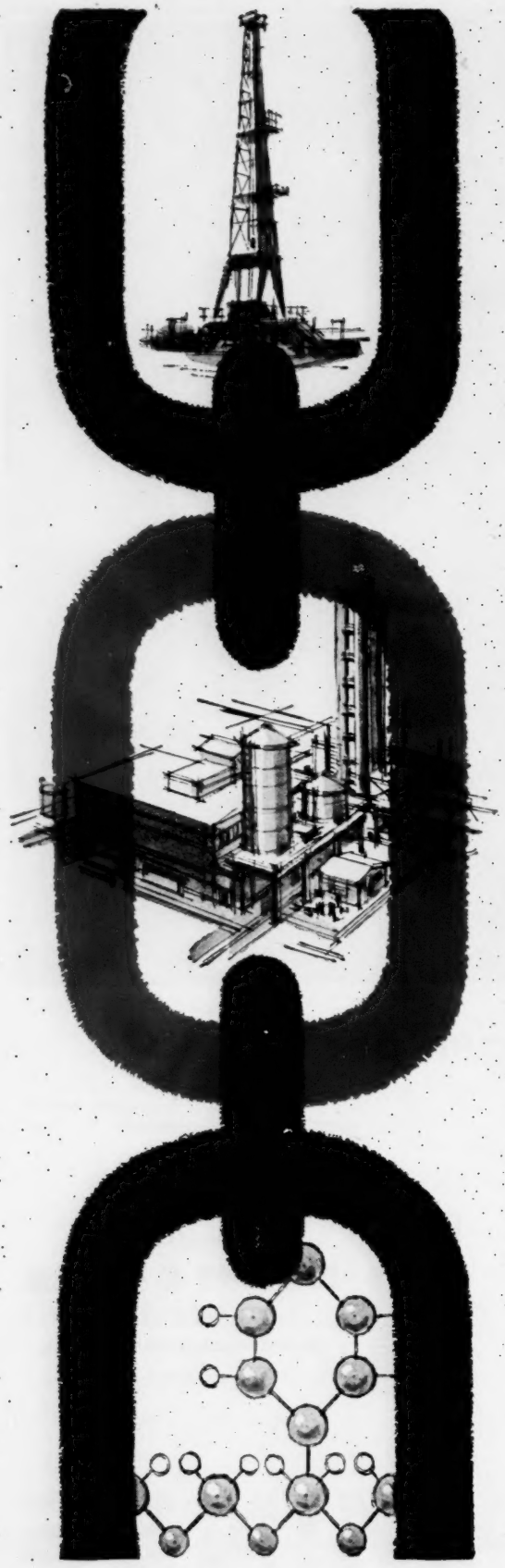

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CW PHOTO—LIONEL CRAWFORD

Von Kohorn brothers, Henry (right) and Ralph, tell CW editor details of their experience in Russia.

Engineering Fibers on a Worldwide Scale

First U. S. company to cash in on the recent Russian call for chemical processing help, Von Kohorn International Corp. (White Plains, N.Y.) this week finds itself in an unexpected publicity spotlight (CW Business Newsletter, Aug. 9). But helping the Russians set up fiber plants—as it will do for the Technopromimport—is "just another job" for the company that claims to be world's "largest to specialize exclusively in synthetic fiber production."

For 40 years, Von Kohorn management told *CW* last week, the company has been supplying know-how, processes and equipment to producers of all major types of synthetic fibers throughout the world, including Russian producers. And in doing so it has become unique among U.S. engineering firms:

- All of its major construction projects have been handled for companies outside the U.S.
- All of the processes and equipment it sells have been developed by its own engineering staff; none is licensed from other companies.
- The company owns no equipment-manufacturing facilities, has all machinery built by licensed manufacturers here and abroad.
- It handles all phases of synthetic fiber projects—from the original market research to the financing and actual operation of completed plants.

Breaking In: The company was organized in Austria and Germany in 1909 by textile industrialist Oscar Von Kohorn. In '21, when the firm started supplying its equipment to Du Pont and several other American producers, it shifted its headquarters to the U.S. (although it maintains seven offices abroad), eventually settling in White Plains in '56. Oscar Von Kohorn headed the organization until his retirement three years ago, still serves in the capacity of "elder statesman."

Today, the job of running the company's operations is shared by brothers Henry and Ralph Von Kohorn, president and executive vice-president, respectively. Both have received extensive training in chemical engineering here and abroad and have grown up in the fiber processing industry.

The company, too, has grown considerably since it built its first two

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European rayon plants in '19. Since World War II, it has engineered and built over $200 million worth of synthetic fiber and textile plants. Its widespread activities, says Henry Von Kohorn, have played a leading role in the creation and development of an independent man-made fiber industry. Aside from building plants in England, France and in other large nations, it introduced the first man-made fiber production in Peru, Chile, Taiwan, Turkey, Rumania, Egypt, Czechoslovakia, Yugoslavia and Belgium.

When Von Kohorn entered the fiber engineering field, the European industry was virtually controlled by a few large producers and chemical cartels. Prospective producers in many of the smaller European countries were eager to get into fiber production. By supplying this demand for fiber know-how equipment, Von Kohorn helped many small producers get their starts—and turned a tidy profit in the process.

Although the company has not handled complete plant projects in the U.S., it does not restrict its activities exclusively to foreign operations. But business here has decreased, largely because, says Von Kohorn, of the self-sufficiency of U.S. fiber producers, all of whom are large enough to maintain their own engineering facilities for process and equipment design and development.

Technology Buildup: To develop the processes and equipment it sells, Von Kohorn maintains a staff of more than 100 engineers and chemists, many of whom are engaged in original research on fiber processes and on continuous, automatic machinery. Other members of this technical staff carry on the commercial-scale, in-plant testing of the processes and equipment, are responsible for getting plants into full operation before they are turned over to the customers' operating groups. In about a half-dozen of the plants it has built, Von Kohorn supplies the key management personnel of the permanent operating staff.

The company has acquired some licenses for equipment it needed to round out its line, but over 99% of the machinery it sells is of its own design. Until recently, it maintained a machine shop for producing much of this equipment, but now it relies entirely upon its licensed machinery manufacturers to supply all plant requirements.

The desirability of this flexible equipment procurement arrangement is readily apparent, says Henry Von Kohorn, when the international scope of the company's operations is considered. Because Von Kohorn handles all details—including the financing—of foreign plants, it must take into consideration the credit relations between the foreign countries involved.

For example, British-made machinery couldn't be supplied for the rayon plant expansion Von Kohorn is currently working on in Egypt because there are now no commercial arrangements between these two countries. (Egyptian equipment will be supplied by U.S. and German firms.) On the other hand, equipment for an expansion last year of Argentina's Sniafa, S.A., rayon plant had to be supplied primarily by British firms, since Britain was then the only country extending the requisite credit to Argentina. Von Kohorn's newest job for Sniafa (*CW Business Newsletter, Aug. 2*) may be supplied from the U.S., however, since Washington now appears to view credits for Argentina more sympathetically.

Foreign Market Fears: Dealings like these in 30 different countries have convinced Von Kohorn that there is an excellent foreign market for American technical know-how. But many U.S. companies are missing a golden opportunity abroad, says Von Kohorn, because they don't want to get involved in the complications and imagined risks of foreign negotiations, contracts and payments. And those who do venture abroad often fail to realize as much profit as they should because they do not send complete engineering services along with the processes or licenses they sell. Another reason: they aren't aware of how to take the best advantage of foreign tax laws.

Although Von Kohorn is not actively seeking to become a go-between for U.S. and foreign process companies, it has served in that capacity. And it is currently considering managing foreign licenses—i.e., handling details of contract negotiations, payments and engineering—for U.S. firms. In this area, the company is now handling two small contracts for U.S. clients, and it is interested in licensing for its own use synthetic

fiber raw material processes that would supplement its own fiber production processes.

This policy would be consistent with its present practice of providing complementary processing facilities in synthetic fiber plants. In addition to its lineup of processes for the production of fibers, such as nylon-6, nylon-66, polyester, polyacrylonitrile, polyvinyl-acetate and rayon, Von Kohorn has developed its own electric-retort method of making carbon bisulfide (for use as solvent in rayon processing), a cellophane manufacturing process and a pulping process for making viscose pulp from sugar-cane bagasse. All told, the company holds more than 500 patents on fiber- and film-making machinery and processes.

Henry Von Kohorn is also willing to give his personal advice to U.S. firms interested in doing business with Russia.

In his negotiations in Russia, he says, he found the Soviets "tough bargainers, but businesslike, reliable and frank." As Henry Von Kohorn sees it, the Russians need equipment as well as engineering know-how. Reason: their ambitious seven-year expansion program exceeds their present capacity for building machinery.

But dealing with the Russians is not simply a matter of sitting down with a few executives and coming to terms. For one thing, the Russians always insist that a plant be operating at guaranteed performance before they take it over. To meet this requirement, Von Kohorn will send 10-20 specialists to Russia to supervise the construction and initial startup of the Technopromimport plant. The contract is for a polymer-type fiber plant, covers all of the facilities required for production of fibers, yarns and fabric. Payment will be in dollars, in full, upon delivery of equipment to the plant.

Foreign Formula: The effectiveness of Von Kohorn's operating formula is attested to by more than 70 plants of various types in 30 different countries. About 25% of the world's total rayon production is made on Von Kohorn machines or by plants originally supplied by Von Kohorn.

If there's any secret to his company's success formula, says Henry Von Kohorn, it is the know-how of tailor-making contracts to suit the foreign country.

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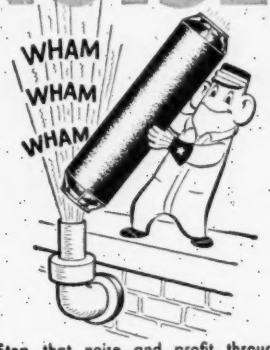

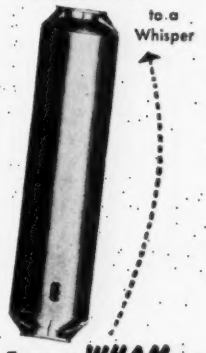

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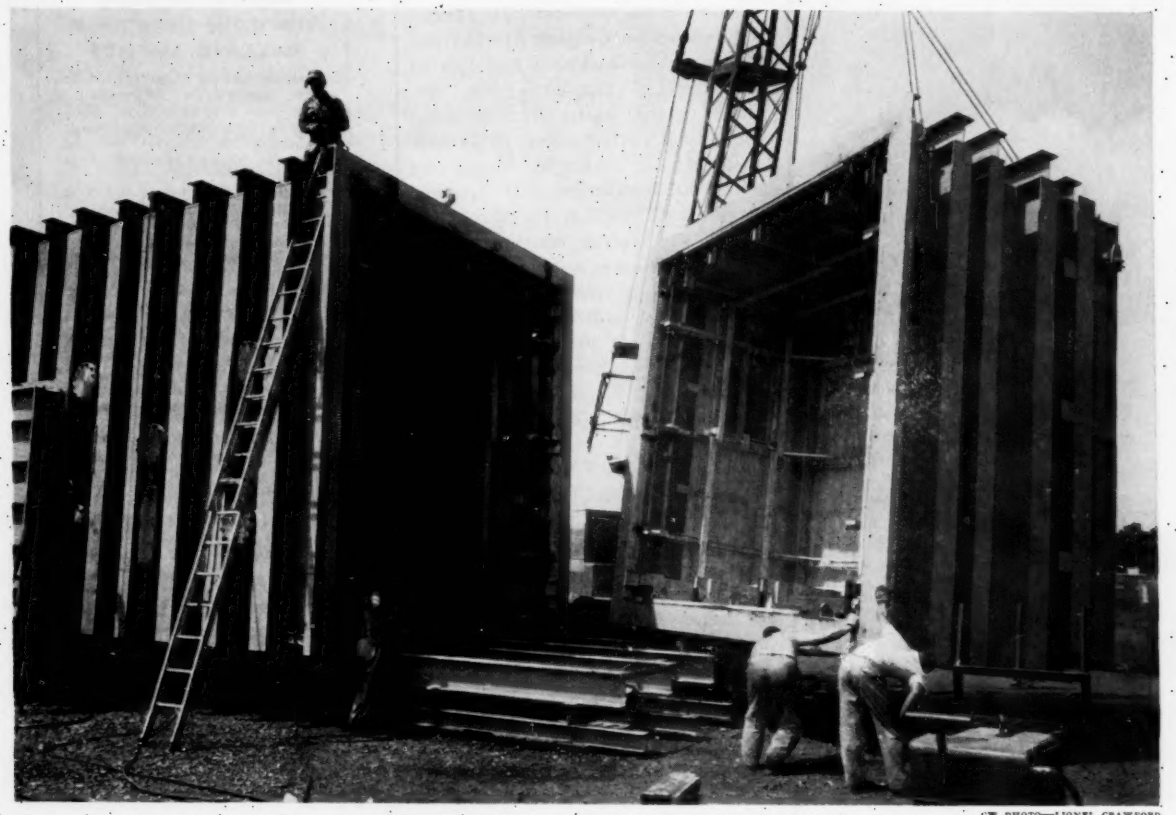


CW PHOTO—LIONEL CRAWFORD

Dismantled for shipping, new chamber tests products at several extreme conditions at same time.

Toughening Up Chemical Test Chambers

The cavernous steel box (above) is en route this week from Tenney Engineering, Inc. (Union, N.J.), to a missile parts maker who prefers not to be identified. It's no secret, though, that the $500,000 construction unit, which can simultaneously produce new extremes in temperature, altitudes and vibration, typifies the expensive new look in environmental test chambers.

Perhaps as important as the extreme range of conditions produced by the new unit is its ability to produce any or all of the test extremes —at the same time. Chemical researchers have learned that new materials or parts that may stand up to rugged pressures, temperatures, humidity and vibration conditions when tests are made separately may break down in an environment that combines some of these conditions.

The requirements for combined-testing units, plus the need for precise control of test conditions, have created a lot of new business for environmental equipment makers.

Last year, makers of this type of test device sold goods worth some $7.5 million (this excludes vibration and shock equipment*). In '52, industry sales were $4.5 million.

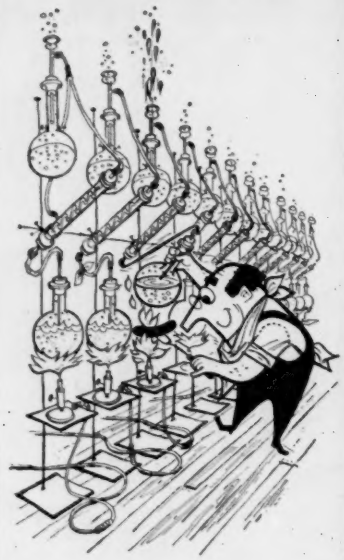
And aside from the big change in sales volume, there has been a substantial change in types of customers —in '52, 80% of sales were to government agencies (such as the Air Force); in '57, only 40% of the equipment went to government buyers.

Producing this test equipment are 25-30 companies, of which Tenney is largest (last year, it had 45% of the over-all sales). Probably in the second spot, volumewise, is Murphy & Miller, Inc. (Chicago).

Now that the government's share of the environmental test units has been reduced, chemical process industries are among the largest customers. This includes most of the major chemical companies—Du Pont, Merck, American Viscose, Atlas Powder, Carborundum, Union Carbide, Celanese, Hercules, Thiokol and Eastman Kodak. These firms use the equipment for research on solid and liquid propellents, drugs, plastics, paints, oil, rubber, color film, adhesives, and a gamut of other products.

The test device makers are, in turn, good CPI customers. Typical of their purchases: Foamsil (Pittsburgh-Corning's foamed silica insulation); Bakelite, for thermal breakers and closures; Freon refrigerants; silicone rubber

*Done by such firms as Calidyne Co. (Winchester, Mass.).



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and Teflon for seals; and Fiberglas insulation. (Tenney machines an air exhausting bellows from solid Teflon.)

Emphasis on Control: Murphy and Miller, which makes a full line of environmental test equipment, considers control instrumentation about the most important aspect of its business. As an example, it cites a $160,000 installation that required more than $75,000 worth of controls.

M&M's newest equipment provides temperatures as low as —225 F (via mechanical refrigeration; —140 F was once considered rock-bottom); temperatures up to 1200 F (500 F was once considered tops); vacuums of less than 10.5 microns, vibration frequencies over 5,000 cycles per second, and a full range of humidity conditions (0-100%).

M&M says the CPI primarily buys equipment for evaluating lubricants and fuels — determining how they would stand up under the exotic conditions of outer space. But such items as valves, piping and construction materials are also tested.

As the altitudes and velocities of missiles increase, test equipment will be expected to simulate even more severe operating conditions. While environmental test equipment makers feel they've pretty much reached the limit of what can be done with available refrigerants, etc., they're aware that new space technology tools will have to be forged.

General Electric's missile and ordnance systems department (Philadelphia), for example, recently revealed what it feels is the country's largest plasma jet generator for testing space models under the high-temperature and the chemical conditions of atmospheric re-entry from outer space. It is essentially a 120-ft.-long shock tunnel, in which specimens are exposed to blasts of air driven by exploding gases. The air—at 18000 F and 5,000 psi. — sets up flow patterns that guide spacecraft design.

Across the continent — at University of California (Berkeley) — new frontiers are being opened in the ultracold region using new equipment that cools matter to near absolute zero (—459.6 F).

Such extremes are, of course, far beyond the range of commercial environmental testing equipment. But the fact that they're being explored is incentive enough for continuing

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C. J. Wiley suggests some interesting properties and applications for

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Q. Mr. Wiley, what is the current major interest in the Trialkyl Boranes?

A. The biggest potential for these compounds lies in their catalytic behavior. They promote the polymerization of such compounds as vinyl chloride, methacrylic esters, acrylic esters, and acrylonitrile. Tributylborane appears especially attractive as a catalyst for methacrylates and styrene. Recent Japanese and Russian papers on this use are very interesting. We have translated the Russian paper and have copies available for distribution.

Q. Are the Trialkyl Boranes stable in water?

A. The hydrolytic stability is very good in neutral, acid, and alkaline solutions.

Q. How stable are they in other media?

A. Oxidizing agents, including air, must be avoided, but otherwise boron-carbon bonds are very stable.

Q. What are the general solubility characteristics of Triethylborane?

A. Triethylborane and the higher Trialkyl Boranes are generally soluble in hydrocarbons, insoluble in water, and miscible with most organic solvents.

Q. Is it true that the higher Trialkyl Boranes are less pyrophoric than the Trimethyl and Triethyl compounds?

A. Yes. Pyrophoricity decreases as the molecular weight of the n-alkyl group increases.

Q. Can Triethylborane be used as a jet fuel?

A. Yes, because of its high flame speed, wide range of flammability, and high blow-out velocity.

C. J. Wiley, A.B., University of Pennsylvania, M.S., University of Massachusetts, Market Development Manager, Callery Chemical Company

Q. What Trialkyl Boranes do you expect to offer?

A. Right now, we can supply 20-ml samples and up to one-pound quantities of Triethylborane and Tri-n-butylborane. Plant flexibility at our new Lawrence, Kansas plant, now under construction, will eventually permit us to produce a variety of Trialkyl Boranes. One of these is Triisobutylborane. Meanwhile, we would be pleased to work with you to help develop any promising applications that you may have in mind.

Q. Are there any unusual aspects of Trialkyl Boranes that deserve attention?

A. Triethylborane and Sodium Hydride form a liquid adduct which should have some very interesting catalytic properties. Trialkyl Boranes synthesized from Diborane and terminal olefins can be oxidized to produce primary alcohols.

Q. Do you know of any other useful derivatives of the Trialkyl Boranes?

A. Some of the amine complexes of Trialkyl Boranes have been patented as diesel oil additives. They serve as cetane improvers presumably because they increase the flame speed of the fuel-air mixture. The complexes with higher amines should have the corrosion and sludge inhibition properties associated with these amines.

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tracers SECTION
(Classified Advertising)
F. J. Eberle, Business Mgr.

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Philadelphia 3 ..... William B. Hannum, Jr., 6 Penn Center Plaza, RIttenhouse 6-0670

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San Francisco 4 ..... William C. Woolston, 68 Post St., DOuglas 2-4600

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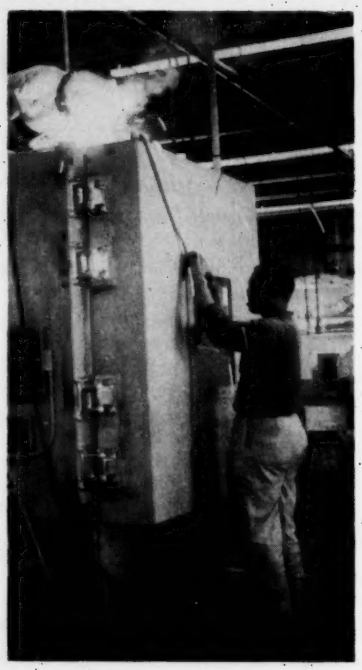

Environmental tester for electronic parts is welded at Tenney.

engineering research. Considering the products demanded of the CPI, it's likely that there will be more calls for materials-testing equipment that can attain new extremes.

PRODUCTS

Hot Resins: Resinous products for use in reinforced plastics subject to temperatures up to 500 F have been developed by the chemical materials department of General Electric Co. (Anaheim, Calif.). The resins are reportedly 100% polymerizable, will not surface-craze or delaminate during postbaking operations, and are chemical resistant.

•

Lube Advance: A new series of radiation-resistant fluids that are also high-temperature-resistant lubricants, coolants and hydraulic fluids have been developed for the Air Force by Monsanto Chemical Co. and The Shell Development Co. The compounds are polyphenyl ethers, which remain liquid from 20 to 800 F.

•

Rabies Muzzler: Eli Lilly is testing a simplified vaccine to immunize human beings against rabies. More than 50 members of Kentucky Veterinary Medical Assn. have taken

shots of the new vaccine to help evaluate its effectiveness. The disease is a serious occupational hazard among animal handlers. At present, the only protection is a series of 14 shots, given to suspected victims of rabies.

•

Rauwolfia Alkaloids: S.B. Penick & Co. (New York) now offers experimental quantities of the following Rauwolfia compounds: ajmaline, ajmaline hydrochloride, aricine, isoreserpiline, reserpiline oxalate, reserpinine, raunescine, serpentine and serpentine nitrate. Soon to be available are alstonine perchlorate and isoraunescine.

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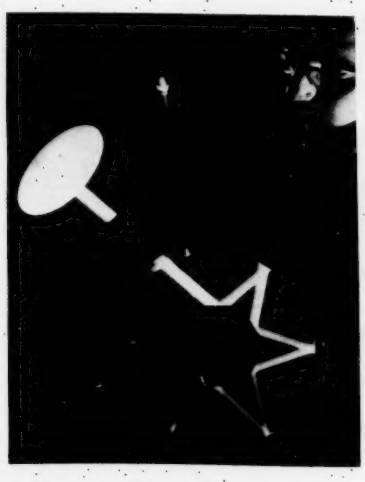
Moly Metal: Seven types of molybdenum metal powder are now available from Sylvania Electric Products Inc. (New York). They vary in particle size, purity and price (from $3.35 to $4.10/lb.).



Light Chopper

For studying the duration of fluorescence in phosphors used in lamps or TV picture tubes and similar phenomena, Westinghouse researchers have developed a method of mechanically making billionth-of-a-second light flashes. The new system is said to be simpler to construct and operate than the usual methods of producing short pulses of light (e.g., by electrical discharges), and it can handle radiations other than visible light. It has been particularly useful, Westinghouse says, in researching the response of materials sensitive to infrared.

Tracers TO THE CHEMICAL PROCESS INDUSTRIES

OPPORTUNITIES IN EUROPEAN AND STERLING AREAS

Progressive and old established chemical company in industrial North-West England desires association with American company wishing to expand overseas. Facilities for manufacture and marketing are available and can be developed.

Contact Box No. 683, c/o. Dawsons, 129, Cannon Street, London, E.C.4. England

SURPLUS WANTED
CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.
CHEMICAL SERVICE CORPORATION
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HAnover 2-6970

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CHEMICALS—OILS—SOLVENTS
DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.
BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

CUSTOM GRINDING
- Ultra Fine or Coarse
- Specialty or Volume
- Heat Sensitive Materials
- Complete Blending and Grinding service on unit or contract basis

A. Cramer Corp. 10881 S. Central Avenue
Box 682 Oak Lawn, Illinois

SURPLUS CHEMICALS WANTED
Chemicals—By-Products—Plasticizers
Pigments—Resins—Solvents
CHEMSOL, INC.
70 Dod Street, Elizabeth, N.J. EL 4-7654

FOR SALE

Patterson Type B Conical Blender 9' diameter, 233 cubic feet working capacity. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Unused Horizontal Aluminum Tanks 4000 & 7000 gal. Perry, 1415 N. 6th St., Phila. 22, Pa.

Struthers-Wells 1000 sq. ft. stainless steel shell & tube heat exchangers. Perry Equipment Corp., 1415 N. Sixth St., Phila. 22, Pa.

Hydrogenation Plant — fully equipped — with processes for various desirable products—valuable to company seeking diversification. FS-8657, Chemical Week.

BUSINESS OPPORTUNITY

Chemical Manufacturing Company Wanted Intermediaries desire contact with potential. Prefer St. Louis area. No brokers please. P.O. Box 3471, Richmond Heights 5, Mo.

WANTED

Wanted: Carbon steel conical blender, approximately 300 cu. ft. capacity. Forward complete details, including price, location, condition, to H. Ohl, S. B. Penick & Company, Lyndhurst, N.J.

Employment OPPORTUNITIES

WANTED—TECHNICAL EDITOR

A young chemist or engineer with experience in the rubber industry is desired for the position of technical editor on the trade journal, RUBBER WORLD. Travel to meetings and plants and ability to report for publication required. Salary and future prospects will depend on interest and ability. All replies will be held in absolute confidence. Address:

R. G. Seaman, RUBBER WORLD
386 Fourth Ave., New York 16, N. Y.

CHEMIST
AAA 1

Firm wants man for development of resins for wax, ink, coatings field. Knowledge of shellac, polymer, wax important. New ideas for diversification welcome. Salary open. Replies confidential.
P-8572 Chemical Week
Class. Adv. Div.; P.O. Box 12, New York 36, N.Y.

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POSITIONS VACANT

Wanted. Technical Director and Chemist thoroughly familiar with formulations, foam operations and production Polyether Foams for cushioning. No need reply unless you are now producing a satisfactory Polyether Foam on production basis. Replies confidential. P-8638, Chemical Week.

We seek the Consulting Services of a soap maker, experienced in the manufacture of Bottling Conveyor Soap Lubricant. P-8640, Chemical Week.

POSITIONS WANTED

12 years Chem. Sales; 4 yrs-mgmt. Very successful in Sales and Sales Mgmt. to many varied types of customers. Aggressive and matured. Seeking an opportunity. Early forties. BS in Chem. PW 8454, Chemical Week.

Seeking an aggressive Market Development or Technical Sales Service representative for the West Coast? Chemical Engineer, 41, presently in deadend situation, seeks responsible position developing your sales. Fifteen years laboratory, technical service, and plant production experience in synthetic resins, adhesives, coatings, and finishes. Four years direct sales in highly competitive resin market. Have taken present products from zero to second major supplier in western sales. Position must offer future. Possibly relocate under right circumstances. PW-8629, Chemical Week.

SELLING OPPORTUNITY WANTED

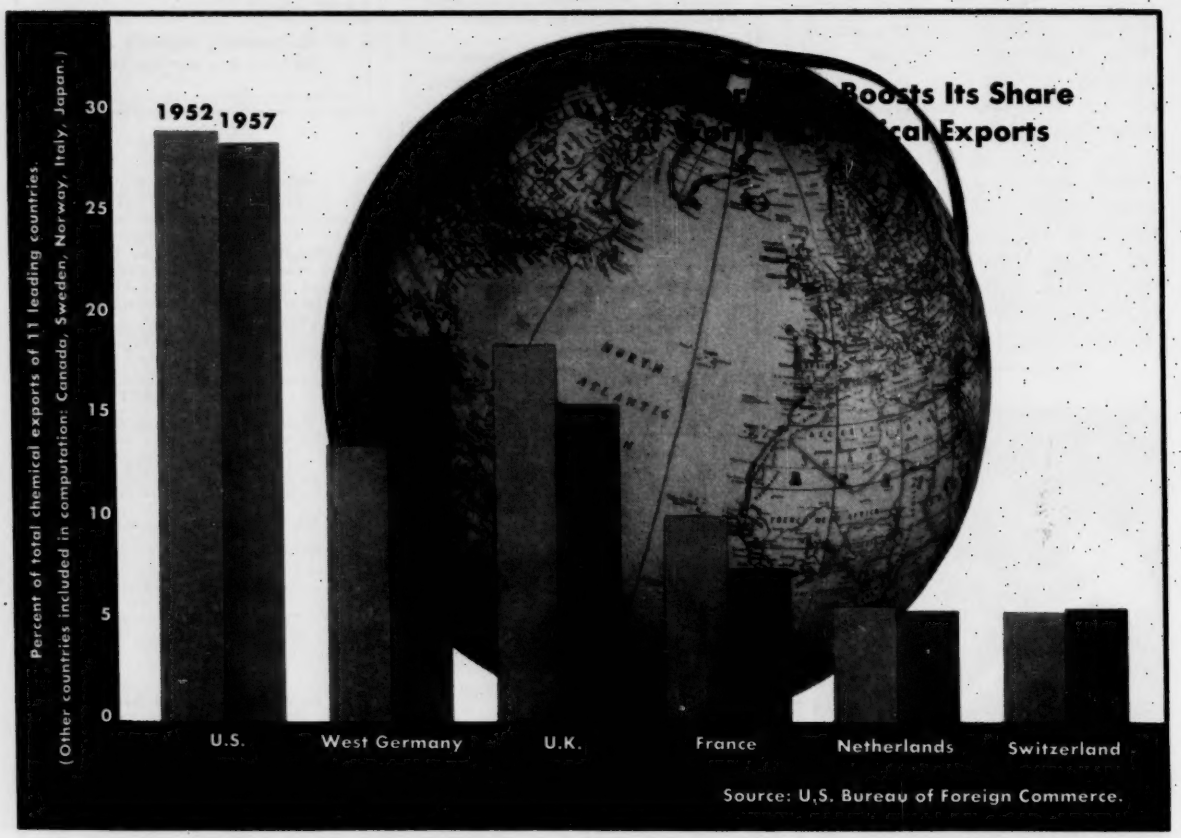
Canadian chemical company, located in Toronto, desires exclusive representation for several chemical companies with products well established in United States. Excellent facilities include warehouse space and laboratory. RA-8583, Chemical Week.

Management SERVICES

JAMES P. O'DONNELL
Consulting Engineer
Professional Engineering for the Petroleum and Process Industries
39 Broadway
New York 6, N. Y.
Beaumont, Texas

CHARTING BUSINESS

August 16, 1958



Germany: Big Chemical Exports Gainer

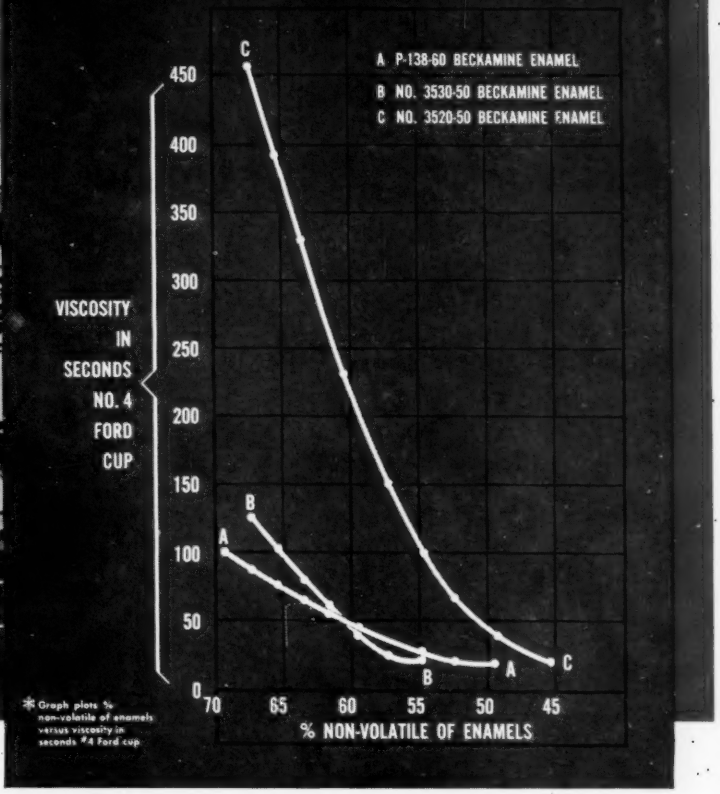
West Germany was the biggest gainer last year as total value of chemical exports by 11 countries hit some $4.8 billion, compared with $2.8 billion in '52. It was the only nation that showed a significant increase in its percent-share of the world chemical export market. Last year, West Germany exported $902 million worth of chemicals, nearly 19% of value of chemicals exported by the 11 nations, compared with $359 million worth, 13.4%, it shipped in '52.

The republic's chemical sales to the U.S. hit $60 million last year, a 25% gain over sales in the previous year. The U.S. is Germany's third most important chemical customer. Holland is its best ($69 million); Italy is second ($61 million).

The U.S. still maintains the lead in volume of export. It exported more than $1.4 billion worth of chemicals last year; $822.5 million in '52. But the U.S.'s share of the total chemical export market has not grown recently, is still about 29%.

While the United Kingdom and France have increased the dollar value of their chemical exports, their share of the world market has decreased significantly. In '52, the U.K. exported about $515 million worth of chemicals, an 18.3% share. Last year, it exported $749 million worth, a 15.7% share. France's share, meanwhile, fell from 10% to 7.5%.

*Viscosity Curves of ENAMELS made with high, medium and low viscosity BECKAMINES



*Graph plots % non-volatile of enamels versus viscosity in seconds #4 Ford cup

For Your Alkyd Enamels –

RCI Beckamine and Super-Beckamine Resins

The above graph gives you an example of the useful type of information you will find in the current RCI booklet on urea and melamine resins. The graph compares the reduction rate of typical low, medium and high viscosity BECKAMINES in a standard white gloss enamel formulation.

If either a urea or a melamine resin is the sole vehicle of an enamel, a very hard brittle film results. Therefore, it is normal practice to combine the urea, or melamine, with a suitable alkyd resin. This succeeds in (1) plasticizing the urea or melamine to improve adhesion and flexibility; or (2) modifying the alkyd with the urea or melamine to improve hardness, color, gloss and resistance to chemicals.

Since ureas and melamines are used in amounts constituting from 5% to 50% of the total vehicle solids for most industrial finishes, we consider the problem from the second point of view; that of modifying the alkyd. Economically, urea resins improve alkyds without greatly increasing final cost since urea prices are in the same range as alkyd prices.

Melamine resins are higher priced but melamines improve alkyd properties materially more than do urea resins.

If you are formulating automotive primers and body enamels, truck and tractor enamels, toy and implement enamels, or wood and metal furniture finishes, you can depend on the wide range of RCI BECKAMINE and SUPER-BECKAMINE resins to provide a product suited to your specifications. Write to RCI today for full information. Ask for *Amine Booklet*.

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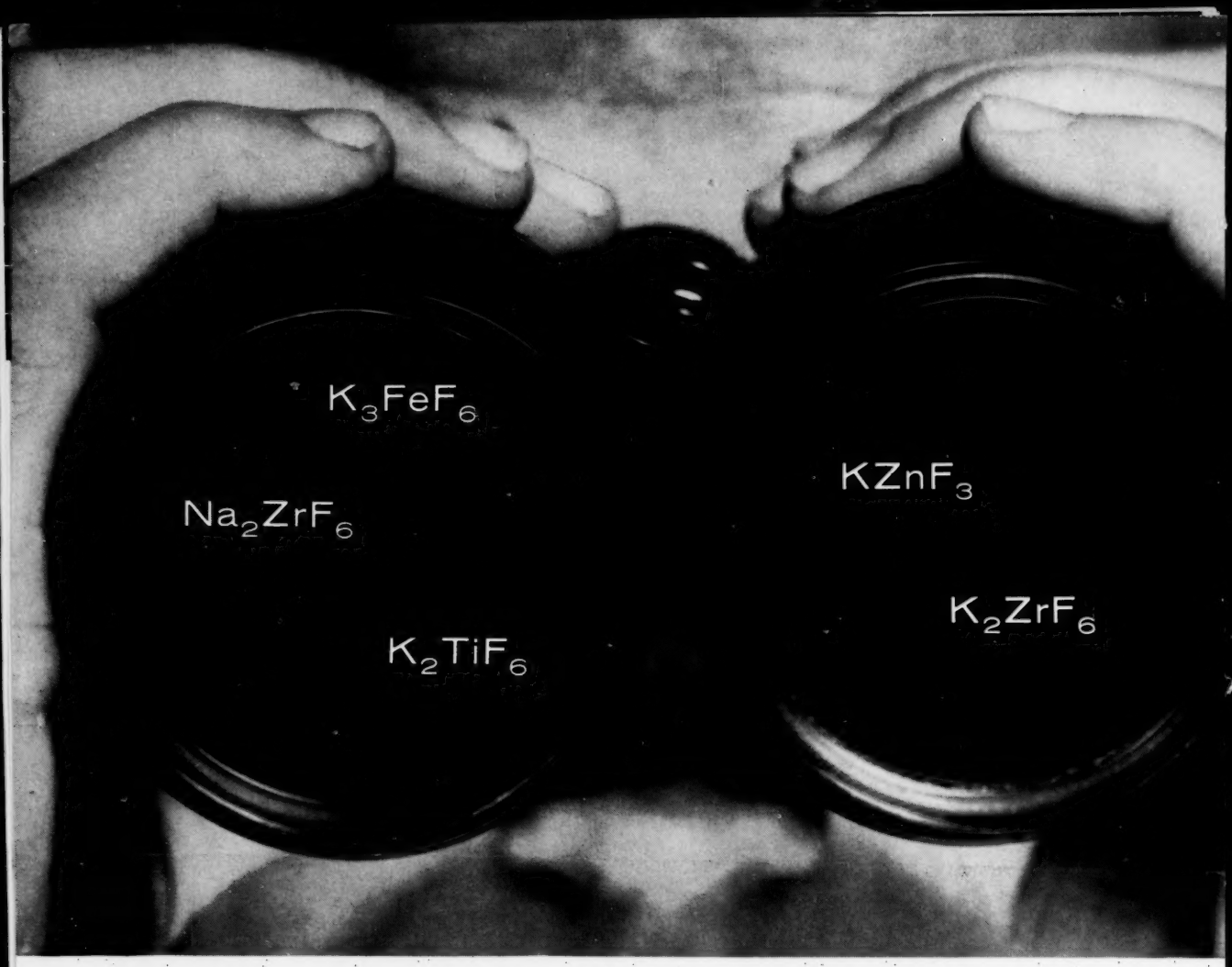

Looking for DOUBLE FLUORIDES?

Look no further! Your best source for double fluorides (as for most other fluorine chemicals) is Baker & Adamson. Here's why.

B&A offers *seven* double fluorides. They are:

Chromium Potassium Fluoride
Potassium Ferric Fluoride
Potassium Titanium Fluoride
Potassium Zinc Fluoride
Potassium Zirconium Fluoride
Sodium Silico Fluoride
Sodium Zirconium Fluoride

This specialized group of products is part of an extremely wide range of fluorides manufactured by Baker & Adamson, as part of General Chemical's extensive fluorine program. You expect this scope from General Chemical, with its basic position in elemental fluorine, hydrofluoric acid and their raw materials . . . its manufacturing ability and versatility . . . and its major, continuing research in fluorine chemistry and technology. General Chemical leads today in virtually *every* aspect of fluorine research and production . . . and this specialized knowledge is at your service.

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